Construction IN THE SOUTH

Caterpillar diesel D4 tractor equipped with bulldozer works in gravel on county road near Monticello, Arkansas.

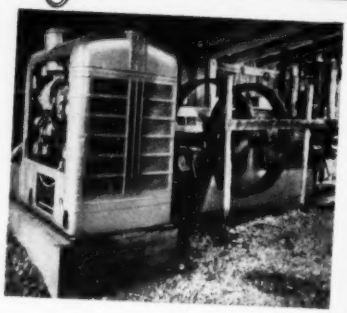
MARCH 1952

General Motors Diesel
Case History 5012-12

USER: United Feldspar Minerals Corp.
Spruce Pine, N. C.

INSTALLATION: 5-year-old GM 4-71 Diesel (used previously on sawmill) replaces steam engine on Ingersoll-Rand FR-1 compressor.

PERFORMANCE: Does as much work as 2 portable compressors with 4-cylinder gasoline engines and supplies more air. Maintains 100 lb. pressure for drilling. Cuts fuel costs 50%.



THIS DIESEL
does the work of two engines

Cuts fuel costs 50%—Supplies more air

Here's another typical case of how General Motors Diesels take over any job—stick to it month after month—and do it better than either gasoline or steam. After four years on a sawmill—and with one minor overhaul—this 4-71 is now outperforming *two* 4-cylinder gasoline engines and cutting fuel costs in half. Whatever your need for power—in air compressors, trucks, tractors, cranes or crushers—why not learn firsthand how much more profitably and dependably the GM 2-cycle Diesel can deliver it? There's a GM Diesel distributor in your vicinity who'll gladly give you all the facts.

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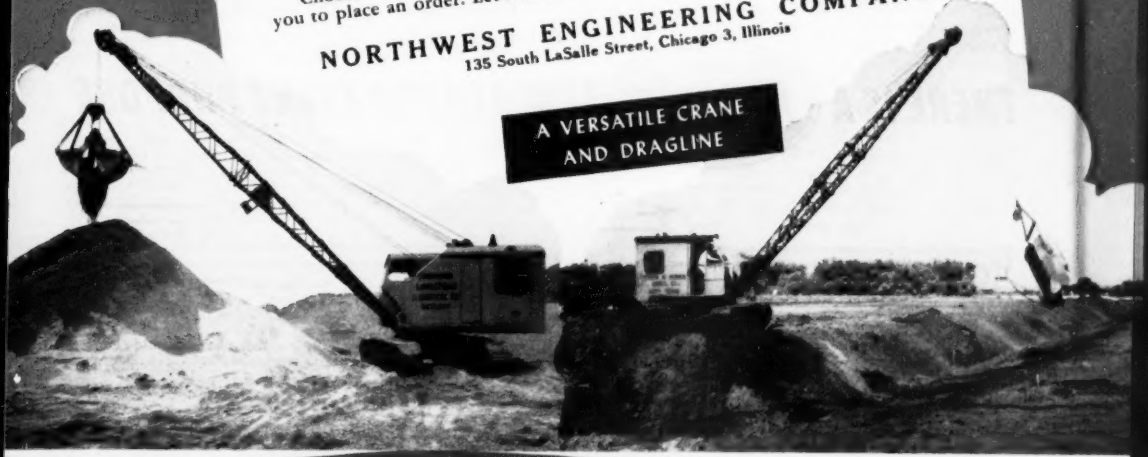

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Contents

The CONSTRUCTION magazine is published in four editions: C edition is for North Carolina and South Carolina; S edition, Alabama, Florida, Georgia and Tennessee; N edition, Kentucky, Maryland, Virginia and West Virginia; W edition, Arkansas, Louisiana, Mississippi, Missouri, Oklahoma and Texas.

Construction

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Unparalleled Expansion in Oil Industry Cited

The oil industry has just completed a period of unparalleled expansion, in which both physical and financial resources were strained to meet a record-breaking growth in demand for virtually all products,' declares Dr. Robert E. Wilson, chairman of the board of Standard Oil Company (Indiana).

Comparing 1951 with 1940, the domestic demand for oil products was up 94 per cent, he said. Comparing individual products for the 11-year period, gasoline was up 86 per cent, diesel fuels up 419 per cent, other distillate fuels up 136 per cent, residual fuels up 66 per cent, natural gas up 154 per cent, chemicals from petroleum up 1,700 per cent, liquefied petroleum gas up over 13,000 per cent.

In comparison with this rate of expansion due to wartime needs plus unusual postwar expansion which culminated in an 8.4 per cent gain in 1951 over 1950, Dr. Wilson said the demand curve is "expected to flatten off somewhat in the next few years" to an average of possibly 4 per cent. This flattening will be due to: Increasing use of natural gas; fewer coal furnaces left to convert; most large farms are already well mechanized; railroad dieselization is well along; fewer new cars in the next two years.

As to meeting this growth in demand, the only immediate question is that of steel supplies, the Standard Oil chairman told the Chicago Association of Commerce and Industry at a luncheon meeting in the Sherman hotel. "If we assume an average increase of about 4 per cent per year for the next few years, the present allocations of steel, though inadequate to meet the requests and desires of the industry, will just about take care of this amount of expansion in crude production and refining capacity, plus making up for the decline in existing wells and the depreciation and obsolescence of refining equipment."

Speaking on "America's Future Oil Supplies," Dr. Wilson said the past five years have opened up many promising new oil provinces. These areas included the Gulf Coast so-called "tidelands;" the Spraberry trend in West Texas probably covering at least 500,000 acres, "the largest, though not the most profitable, field in the world;" the Julesberg basin in northeastern Colorado and southwestern Nebraska; several producing areas in Utah, "which never produced appreciable oil until 1948; the spectacular developments in Alberta, Canada; and finally, within the year, and after 20 or 30 dry holes, the opening up of tremendous potentialities by the discovery of high-quality oil in several different parts of the Williston Basin, which covers western North Dakota, eastern Montana, and northwestern South Dakota."

The Standard Oil chairman emphasized the importance of maintaining the depletion allowance and other incentives if this favorable rate of discovery is to continue.

"No fat," said Sprat

—*but he wasn't mixing concrete!*

The particular degree of "fattiness" which proper air-entrainment imparts to concrete mixtures to produce rich, smooth-working plasticity cannot always be obtained with air-entraining cements. In many instances the harsh, bony leanness of the "Jack Sprat" mixes developed by locally available materials cannot be adequately "fattened" by the rigorously standardized air-entraining cements. Only by adding the necessary amount of one of the well-known air-entraining agents to the mix can it produce the creamy fat required for adequate air-entrainment.

It's another case of the necessity for avoiding an arbitrary diet and feeding the individual what is best for his proper development.

Fortunately, the diet provided by air-entraining cement develops enough fat for most concrete mixes to "get by," but only by studying each set of conditions and furnishing just the right diet of air-entraining agent can the best results be obtained from any concrete mixture. The excellent results obtained are well worth the effort. If, however, you are *certain* the conditions are right for using a manufactured air-entraining cement, there's none better than Hermitage Air-Entraining Cement.

If you have any problems or questions on the use and mixing of air entrained concrete, the Hermitage Service Engineer will be glad to help and advise you—contact any Hermitage office.

Correct air entrainment prevents the kind of deterioration shown on this pavement slab. Always be sure your mix will produce the air-entrained concrete the job requires.

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EACH of these three Bucyrus-Erie B-Type Scraper models loads with the same "fountain" action that breaks up chunks and boils material up through to fill the bowl completely.

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Each has the design refinements and strong construction throughout that mean extra ease of handling and servicing, extra yardage hauled, extra long life. Let your International Industrial Tractor distributor give you all the details on these modern scrapers.

BIG RED TEAM

WINS ON PERFORMANCE

Time after time the Big Red Team, of TD-24 Tractor and B-250 or B-170A Scraper, comes out on top in field tests — hauling more yards, loading and dumping faster, completing cycles in less time than comparable units.

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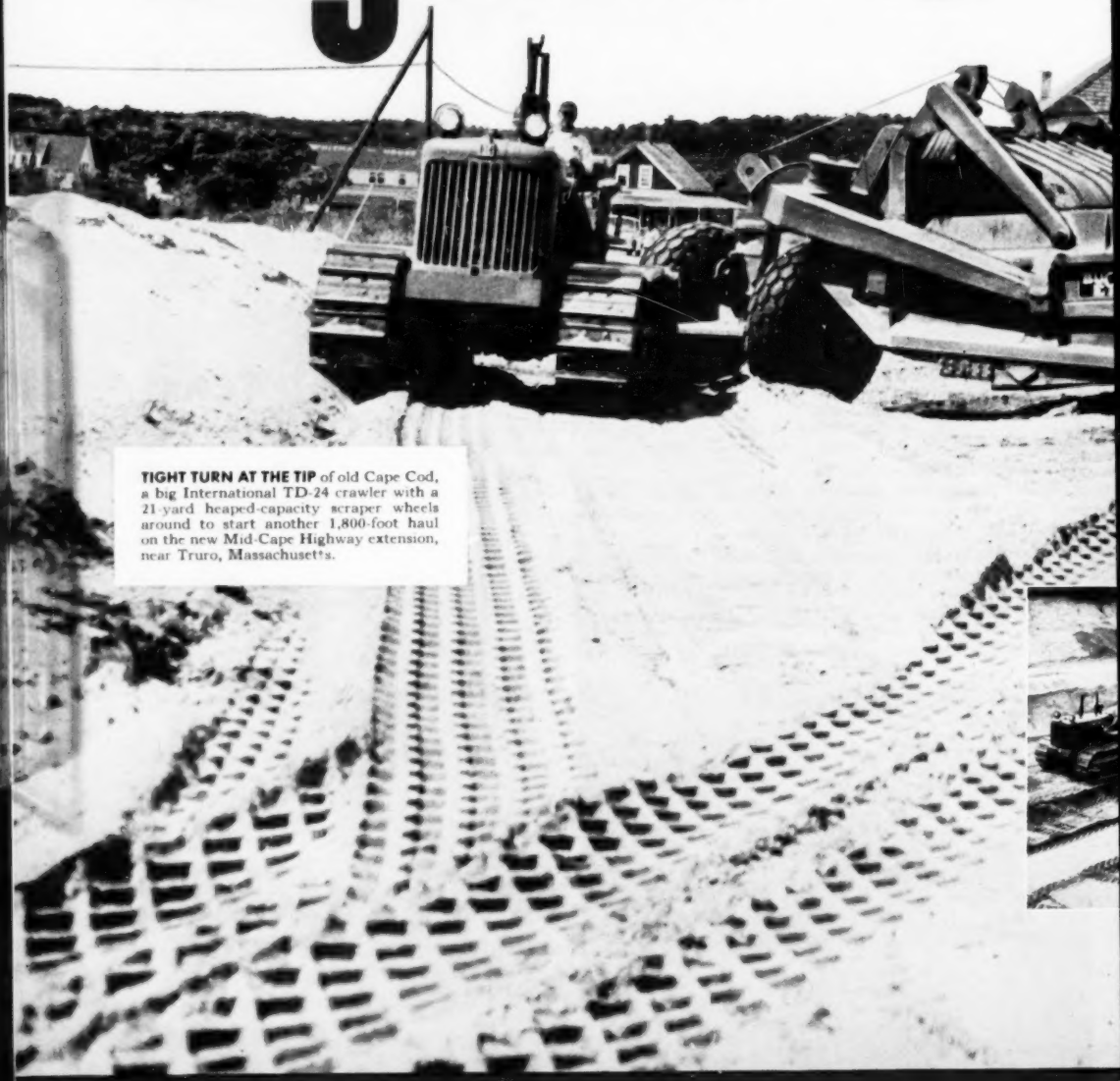
Big Red TD 24



TIGHT TURN AT THE TIP of old Cape Cod, a big International TD-24 crawler with a 21-yard heaped-capacity scraper wheels around to start another 1,800-foot haul on the new Mid-Cape Highway extension, near Truro, Massachusetts.

takes the Cape

BIG RED EQUIPMENT. Here are three of the five Internationals on this job, dozing and hauling the loose, shifting Cape Cod sand. In some bogs, peat has to be replaced with sand, and 50-foot piles driven in for stability of the roadway.

Makes tracks near Truro on sand-slowed highway job

Out near the tip of Cape Cod, where the Pilgrims saw their first tracks of redskins in the sand, today's tourists see the tracks of big red Internationals.

They're extending the Mid-Cape Highway, and where the land isn't sand, it's bog and marsh. It's so bad the S & M Construction Company, of Providence, R. I., won't let many of its vehicles venture off the pavement. But the Internationals charge ahead, moving nearly half-a-million cubic yards of sand to build three miles of road.

Pride of the whole show is "Big Red"—the TD-24—pulling bigger loads faster than any other crawler can.

And here's what an S & M operator says about it: "I wasn't on this rig very long before I found out it was mighty nice to handle. I really pull plenty of dirt!"

"Big Red", with 148 maximum drawbar horsepower and up to 7.8 mph, has more power and speed than any other crawler on the market. And it has finger-tip maneuverability to make pivot turns, feathered turns, and turns with power on both tracks.

All this means a faster work-cycle and more paydirt moved per day.

Ask your International Industrial Distributor for details on the TD-24. Ask him, too, about his fast, ready service and speedy parts delivery. Get all the answers . . . and you'll be a TD-24 man from then on in!

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Lone Star Pushes Steel and Pipe Mills

Above—Open hearth area, looking southwest, at the new plant being erected by Lone Star Steel Co. adjacent to the existing plant 30 miles north of Longview, Texas.

Completion of the new Lone Star steel mill and pipe plant by the end of 1952 will be a boom to oil operators of the Southwest. The new plant, under construction on property adjacent to the older works 30 miles north of Longview, will enable many operators to pick up oil field tubing at the mill and deliver it by truck overnight at the well site.

The company zoomed to the fore about a year ago when a government loan totaling almost $75,000,000 was granted for the purpose of constructing steel-making facilities and a pipe mill which will produce oil country tubular goods. Since then construction of the new plant has been placed under way, with the output of the older facilities maintained at a near-capacity level.

Much of the oil country tubular goods moved either by rail or boat to Texas in the past. Upon arrival, the pipe was transported by truck either to the point of use, or was stored. The latter condition required considerable storage facilities, and also meant still another handling of the pipe when it was picked up for final delivery.

In the case of Lone Star, says Vice President Walter Moreland, storage will be practically eliminated for the consumer. We will be able to furnish materials out of our supply as the consumer needs them. Our men and equipment will load trucks, thus adding another economy for the oil operators. Of great importance is the fact that the source of supply will be located within such a short distance of the point of use."

Lone Star's production of 350,000 tons of oil country goods annually represents only about 15 per cent of the normal demand of the petroleum industry in the Southwest. In present abnormal conditions, Lone Star's production will account for only a fractional part of the demand.

Lone Star's pipe will be of the welded variety. The entire process follows this pattern: Iron ore is mined within sight of the big 1100-ton blast furnace, which melts down the ore to produce pig iron. Pig iron is mixed with scrap in the open hearths to produce steel ingots. Steel ingots are rolled into huge coils of steel strips, or skelp. The latter is formed around patterns. The open seam is then passed through an electric weld machine operating at high speed. A normalizing unit which removes all traces of the welded seam and produces uniformity of structure throughout the pipe.

While completion of the huge undertaking on the banks of Cypress creek in East Texas is far from being realized, Lone Star has made remarkable progress in that direction. Last Easter Sunday the steel division area was a dense swamp. The general contractor, Brown & Root, Inc., came in with a fleet of massive earth-moving vehicles, and by year's end, 1951, the area had been cleared and levelled.

President E. B. Germany says the 1952 record would have to at least keep pace with that of the preceding year if the progress schedule is maintained. "We have had ideal working conditions," the Lone Star chief pointed out. "We are going to make every effort possible to produce pipe before the end of 1952 but to accomplish that our deliveries of equipment must come through as ordered."

It was only on January 1, 1948, that the present management took title to the East Texas works and Oklahoma coal mines after negotiating a deal with the government for the properties. Sale price was $7,500,000. Properties included the blast furnace, coke ovens, power plant, chemical by-products plant, railroad system, slay mill, and many other smaller related facilities as well as ore rights in the vicinity of the plant.

Since the original purchase, Lone Star has added a $2,000,000 cast iron pressure pipe foundry which produces water and sewer pipe. According to W. H. Johnson, executive vice-president, a recent appraisal of the company's older properties totalled $45,695,000.

Conditions of the big federal loan required Lone Star to raise an additional $5,000,000 in new equity money. This was done in 1951, with old stockholders exercising pre-emptive rights to acquire almost $2,000,000 of the new issue. The remaining shares of the new issue were taken by a syndicate headed by Dallas Rupe & Son, of Dallas.

Lone Star maintains executive offices (a modern building, Roper at Mockingbird, was occupied early in 1951) in Dallas. All of the company's officers and directors, except Mr. Bond, the vice-president in charge of operations, are Texans.

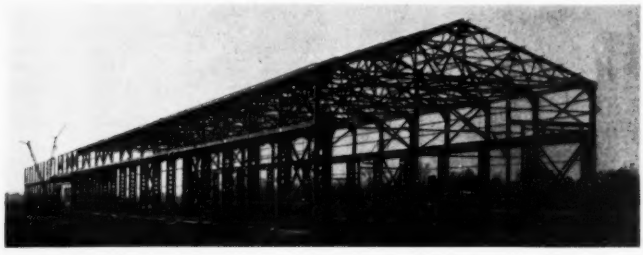
Rumors have it that the government will soon order construction of several new blast furnaces to help overcome the shortage of scrap metal. Lone Star officials refuse to comment on the possibility that their firm might be one of those chosen to erect a new blast furnace, but the company's production figures point in that direction.

More than one hundred firms hold contracts in connection with the present expansion. These include:

A. M. Lockett & Co., Ltd., boilers, two; controls; parts for conversion of deaerating heaters;

(Continued on page 12)

Below—Pipe mill being erected as part of the $75,000,000 expansion of facilities of the Lone Star Steel Co.



Lone Star Pushes Steel and Pipe Mills

(Continued from page 11)

General Electric Co., turbine generator; electric drive for 2-Hi mill; electrical distribution system; switchgear and controls for 15,000-kilowatt turbine generator; 80-ton diesel-electric locomotive; pumping station control centers;

Ingersoll-Rand Co., boiler feed pumps, two;

Brown & Root, Inc.;

American Bridge division of U. S. Steel, open hearth and rolling mill buildings;

Morgan Engineering Co., heavy cranes, eight;

Westinghouse Electric Corp., electric drive for 4-Hi hot strip mill; transformers, two; disconnect switches, eight; power center transformer; auxiliary drive for 2-Hi mill;

Wellman Engineering Co., 10-ton, open-hearth charging machines, two;

Orton Crane & Shovel Co., 40-ton diesel-Dynaflow locomotive crane;

Raymond Concrete Pile Co., Gow test borings at plant site; 5,500 step taper concrete pipes;

Salem-Brosius, Inc., slab heating furnace; roller hearth reheat furnace;

United Engineering and Foundry Co., 4-Hi hot strip mill;

Surface Combustion Corp., 2-Hi reversing, slabbing and plate mill;

Rust Furnace Co., open-hearth furnaces, four;

Whiting Corp., 10-ton hot top crane;

Yoder Company, No. 1 pipe mill, part; No. 2 pipe mill; No. 2 pipe mill rolls; No. 1 pipe mill rolls; pipe mill roll grinders, two;

Manning, Maxwell & Moore, Inc., slab mill cranes, three; strip mill slitter crane; plate handling crane; 10-ton compressor room crane;

William B. Pollock Co., slag pot cars for open hearth; hot metal ladles, three; ladle cars, two; 75-ton ladle; 200-ton capacity steel pouring ladles, six; front flush slag pot cars, four;

Harnischfeger Corporation, wide-bridge cranes, seven;

Hunter Hayes Co., O. H. freight elevator, installed;

Heyl & Patterson, Inc., 15-ton gantry cranes, three;

Differential Steel Car Co., air dump cars, three;

Blaw-Knox Co., dolomite machine; clamshell buckets, four; clamshell buckets, two; ¾-cubic-yard clamshell bucket;

Allis-Chalmers Manufacturing Co., outdoor transformer; circuit breakers, three; jaw crusher; starters for service water pumps, four;

International Clay Machinery Co., charging boxcars, 70; drying oven cars, six;

Morgan Engineering Co., stockyard cranes, two;

Mosher Steel Co., pipe mill finishing buildings; rails for stock and scrap preparation yards; ingot mold foundry;

R. C. Larkin Co., shovel loaders, two;

Lobdell United Co., hot strip mill grinder;

Greenville Steel Car Co., gondola cars, three;

Despatch Oven Co., stopper rod oven;

C. H. Wheeler Manufacturing Co., alterations to power plant condenser;

Sutton Engineering Co., pipe straightening machines, two; entry and delivery tables for straightening machines;

Yale & Towne Manufacturing Co., fork lift trucks, three;

A. J. Boynton & Co., engineering services;

David C. Pfeiffer, electrical engineering services;

M. H. Treadwell Co., Inc., 400-cubic-foot slag pots;

Texas Steel Co., open-hearth charging boxes, 275;

Treadwell Construction Co., ingot mold cars, 37;

Worthington Pump and Machinery Corp., hydraulic de-scaling system;

Economy Pumps, Inc., vertical S.A.F.V. pumps, two;

Whiting Corp., 30-ton iron ladles, two;

American Locomotive Co., 100-ton diesel-electric locomotives, two;

Fairbanks, Morse & Co., hot metal scale; open hearth floor scale; railroad track scale;

Hill Acme Co., tube upsetting machine with dies; alligator shear; tube upsetting machine;

Hydropress, Inc., hydraulic testing machines, four;

Arms-Franklin Corp., cold strip slitting line;

Griscom-Russell Co., feedwater heater; fuel oil heater;

Williams, White & Co., hydraulic test presses; pipe straightening press;

Continental Foundry & Machine Co., roll lathe;

Electric Controller & Manufacturing Co., circular magnets;

Heppenstall Co., coil tong;

Heyl & Patterson, Inc., 40-ton strip mill crane;

Bardons & Oliver, Inc., pipe cut-off machines, 14;

William K. Stamets Co., flying cut-off machine; pipe threading machines, 20;

Selas Corporation of America, pipe normalizing furnaces, two; tube heating furnaces, two;

Wintroath Pumps, Inc., service water pumps, eight;

James H. Matthews & Co., pipe marking machines, four;

Buffalo Scale Co., Inc., pipe scales, four;

Standard Tool & Machine Co., slag pot stands, six; pouring ladle stands, five;

Burt Manufacturing Co., pipe mill ventilators and louvers;

James Campbell Smith, Inc., blooming mill operator's pulpit.

Clark Controller Co., O. H. control centers, four; electric controls for cut-off machines; pipe machine control centers;

Ingersoll-Rand Co., air compressors, four;

Kuhlman Electric Co., liting transformers, 100;

Taylor-Wilson Manufacturing Co., cut-off machine tables, 14; coupling and drifting machines, four; pipe facing machines, two; upsetting machine feed tables, two;

Banks-Moreland Co., fuel oil tanks, two;

Standard Tool & Machine Co., sand bucket;

A. L. Crump & Co., tank suction heaters;

(Continued on page 18)

Above—The motor room basement at the Texas steel plant.

Below—Furnace piers, showing the protective brickwork at the new steel and pipe project of Lone Star Steel Co.

the "CAT" diesel motor grader

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EVERYONE agrees there's one *BIG* reason why "Caterpillar" Diesel Motor Graders are tops! Owners and operators alike know they are designed and built to do every grading job *more* quickly and *more* efficiently. They know from experience that in getting things done these "Caterpillar" Diesel Motor Graders speak the right language.

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Above—Among the outstanding highway improvements completed by Oklahoma last year were those shown above. At left is a section of the 14-mile stretch of U.S. 66, widened from 18 to 24 feet in Lincoln County. The 25-year-old concrete paving was resurfaced with asphaltic concrete. Cost is placed at $553,000. The middle picture shows part of the four-lane divided highway on U.S. 66 in Canadian County. Cost, including four bridges was $1,107,000. Right Picture—Two and one-quarter miles of four-lane Portland cement paving on Duncan's U.S. 81 urban project cost $334,726. This connects with more than seven miles of widening from 18 to 24 feet and resurfacing old concrete with asphaltic concrete.

Oklahoma Highway Work at All-Time High

New road construction established an all-time high in Oklahoma last year and in the opinion of Highway Director C. A. Stoldt the current year will surpass the 1951 mark.

Director Stoldt bases his optimism on the prospects of a $40,000,000 fund for construction in 1952.

The legislature appropriated $30,000,000 outright and there is substantial reason to believe the state highway commission will receive $10,000,000 more from the unexpended balance in the state general fund at the end of the fiscal year June 30.

During 1951 the state completed 551 miles of paving on state and federal roads, said to be the largest amount of hard surfacing ever completed in a year's time in Oklahoma. Included were projects that started into construction in 1950.

Expended for this work was $17,227,948.

In addition the state spent $8,383,315 for special and routine maintenance.

At the same time the state built 185 bridges at a cost of $4,591,480 and repaired 30 others at a cost of $283,781.

All of the paving and bridge work was done by contract awarded on competitive bids.

Ninety per cent of the paving, Director Stoldt says, went down on dirt, gravel or oil mat roads.

Throughout 1951 the state contracted for 542 miles of new road construction.

Of this amount 324 miles went into paving roads that had low type surfaces.

Cost of the 1951 construction program, including 69 bridges mostly of the reinforced concrete box culvert type, was $17,668,333.

Director Stoldt says the state made great progress last year in improved shoulder construction.

Instead of sodding shoulders as was the custom for many years, most of the shoulders were either paved or primed. A great deal of shoulder paving was built on crushed rock bases.

$3,006,009 Awards Made For Oklahoma Roads

The Oklahoma state highway commission bought 83.565 miles of road and bridge construction at its February meeting for $186,873 less than estimated costs.

The commission's $3,006,009 awards were made on projects estimated at $3,192,882.

Approximately 70 miles of paving was let on dirt and gravel roads.

State Highway Director C. A. Stoldt says it was one of the most successful lettings in several years.

Contractors from five states submitted 99 bids on 19 jobs. Some of the major projects attracted as many as 10 bidders.

Broce Construction Co., Woodward, which has confined its operations to northwest Oklahoma, moved into the east and central part of the state with bids that scalped cost estimates fiercely.

Broce took a 13.496-mile roadbed job in Garvin county for $70,452 under the estimate and a 7.693-mile roadbed and paving job in Adair county for $38,801 under the estimate.

Another big dent was made in the estimate on 14.075 miles of Johnston county paving that went to the Park-Ward company of Oklahoma City, for $57,425 under engineering figures, while in Johnston and Marshall counties H. D. Youngman, of Baxter Springs, Kans., was low bidder on 5.596 miles of roadbed and paving for $23,466 under the estimate. Details of the awards:

Delaware—SAP-12 (2) Pt. 1 Surf: U. S. 59, 7.648 miles 32-36 foot 9-inch stabilized rock base, 24-foot double bituminous paving, 5-foot single bituminous paved shoulders from S.H. 33, north, estimated cost, $181,195.80; Steinberg Construction Co., Tulsa, $180,508;

Delaware—SAP-12 (2) Pt. 2 Surf: U. S. 59, 4.990 miles similar construction, continuation of above project, estimated cost, $136,188.03; Quapaw Co., Picher, $132,810.31;

Adair—SAP-425 (7) Pt. 1 Surf: U. S. 59, 7.002 miles similar construction from 0.7 mile south of Adair-Delaware county line, extending south, estimated cost, $192,304.55; Public Construction Co., $191,581.25;

Adair-Delaware — SAP-425 (7) Pt. 2 Surf: U. S. 59, 1.872 miles similar construction on continuation of above project from S.H. 33 south, estimated cost, $49,449.35; Public Construction Company, $49,254.15;

Adair—SAP-425 (7) Br. U. S. 59, .064 mile for two concrete girder span bridges, 160 and 180 feet in length, 28 feet wide, on above project at Ballard creek, south of Watts, estimated cost, $162,241.93; Gaines Brothers, Miami, $165,368.33;

Adair—S-705 (1) SH.: S.H. 51, 7.693 miles 34-38 foot roadbed, 8-inch soil sub base, 7-inch rock base full roadbed width, 22-foot double bituminous paving, 5-foot single bituminous paved shoulders, from U. S. 59 east to Arkansas state line, estimated cost, $251,838.13; Broce Construction Co., Woodward, $211,937.26;

Garvin—RC-100 (1): U. S. 77, .224 mile repairs to two bridges and approaches at Washita river mile northwest of Wynnewood, estimated cost, $34,258.38; Ray W. Lynch Construction Co., Oklahoma City, $33,205.60;

Garvin—F-143 (3): U. S. 77, .552 mile 36-40-foot roadbed, 7-inch concrete paving 24-40-feet wide, piers and abutments for substructure of 535-foot steel bridge on Rush creek, Pauls Valley, estimated cost, $161,845.97; Irwin Construction Co., Oklahoma City, $167,493.71;

Garvin—S-706 (1) S.H. Pt. 1: S.H. 74, 6.708 miles roadbed, gravel surface 7-inch concrete paving in Elmore City, 2 reinforced concrete culverts, Elmore City, south, estimated cost, $228,195.36; Broce Construction Co., $196,150.28;

Garvin—S-706 (1) S.H. Pt. 2: S.H. 74, 6.788 miles roadbed, gravel surface, 7-inch concrete paving in Maysville, five reinforced concrete culverts, continuation of above project north to Maysville, estimated cost, $213,912.50; Broce Construction Co., $185,605.58;

Osage—S.H.-386 (5) S.H. Pt. 1 Surf:

(Continued on page 16)

GENERAL

The Dragline You Need for Extra Speed

Time is money. That's why so many dragline users choose GENERAL after a point-by-point comparison with other machines. GENERAL has more features designed to save time . . . more features that boost yardage and reduce maintenance. GENERAL, for instance, has fewer points that require adjustment or lubrication. Hook rollers, drums, and shafts are mounted on antifriction bearings sealed for life of the machine. Oilless bushings are used for lever connections. Locknuts guarantee safe, permanent fastening of parts subject to vibration. Simplified design assures permanent alignment of shafts and makes it easy to remove any shaft without disturbing adjacent assemblies.

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Big Texas Bid Opening Amounts to $8,377,938

Low bids totaling $8,377,938 were received during the two-day opening held last month by the Texas State Highway Department. Included were projects in the following counties:

Fisher—FM 419, S 1599(1), grading, structures, base and surfacing, Stone Construction Co., Ardmore, Okla., $52,325;

Matagorda—FM 1729, S 1661(1), grading, structures, base and surfacing, Brown & Root, Houston, $124,723;

Young—FM 1768, S 1809(1), grading, structures, base and surfacing, Cooper & Woodruff, Amarillo, $78,190;

Bastrop—FM 1704, S 1685(1), grading, structures, base and surfacing, Holland Page, Austin, $106,725;

Dallas—U.S. 75, U 515(16), grading, structures, storm sewers and concrete pavement, M. E. Worrell & Worrell & Watkins, and L. H. Lacy, Dallas, $984,027;

Washington—U.S. 290, F 236(8), grading, structures, flexible base and asphalt concrete pavement, M. E. Ruby & H. & H. Construction Co., San Marcos, $88,554;

Ector—U.S. 80, F 235(13), grading, flexible base, asphalt concrete pavement and structures, Collins Construction Co., Austin, $493,741;

Motley—FM 684, S 1775(1), grading, structures, base and surfacing, John T. Leslie, Dallas, $43,893;

Polk—FM 1643, S 1824(1), grading, structures, base and surfacing, C. R. Heidelberg, Jacksonville, $77,812;

Jefferson and Hardin—U.S. 69 and 96, F 349(4) and (5), and F 355(5), Pine Island Bayou bridge and approaches, Harry Newton, Inc., Graham, $285,033;

Brazoria—S.H. 35, F 351(4), grading and structures, Thomas, Ratliff & Farr, Rogers, $156,775;

Dallas—Loop 12, F 1089(6), concrete pavement, Uvalde Construction Co., Dallas, $281,860;

Hardin—S.H. 105, S 925(1), grading and structures, Farnsworth & Chambers Co., Houston, $237,500;

Dawson—FM 1210, S 1792(1), grading, structures, base and surfacing, Ernest Loyd, Fort Worth, $87,425;

Angelina—FM 58, S 24(3), grading, structures, base and surfacing, Foley & Williams, Tyler, $115,219;

Hopkins—FM 71, S 258(3), grading, structures, base and surfacing, Ernest Loyd, Fort Worth, $62,851;

Erath—FM 914, S 1346(2), grading, structures, base and surfacing, Fred Hall & Son, Valley Mills, $40,263;

Camp, Upshur and Wood—FM 556 and 852, S 387 (3) and (4), grading, structures, base and surfacing, Foley & Williams, Tyler, $117,199;

Kerr—FM 1338, S 1704(1), grading, structures, base and surfacing, Killian-Keller Co., San Antonio, $36,629;

Anderson and Cherokee—U.S. 84, C 123-1 and 2-11 and 16, bridge and approaches, E. W. Hable & Sons, Corsicana, $65,339;

Wilson—U.S. 181, C 100-4-10, widening culverts and bridges, Schwope Brothers, San Antonio, $43,945;

Terry and Gaines—U.S. 62 and S.H. 51, C 228-1-14 and C 228-3-10, flexible base and three-course surface treatment, Ernest Loyd, Fort Worth, $163,309;

San Augustine—S.H. 147, C 390-2-11, reconditioning base and resurfacing, C. R. Heidelberg, Jacksonville, $35,152;

Angelina—U.S. 69 and FM 327, C 199-4-21 and C 894-1-2, Dew Construction Co., Inc., Tyler, $81,983;

Atascosa, McMullen and LaSalle—S.H. 97, 173, FM 63, 140 and 1786, C 328-6-10, C 328-7-4, C 328-6-10, C 328-7-4, C 328-8-8, C 483-2-2, C 483-5-2, C 517-1-8, C 748-2-3 and C 1740-3-2, reconditioning flexible base asphalt surface and seal coat, Thomas & Ratliff, Rogers, $133,577;

Orange—FM 1130, 1134 and 1136, V 1284-1-2, V 1284-2-1 and V 1285-1-1, grading, structures, base and surfacing, John F. Buckner & Sons, Cleburne, $276,647;

Henderson—U.S. 175, C 197-6-10, asphaltic pavement, Public Construction Co., Denton, $91,249;

Crane—S.H. 51, C 229-3-8, additional surfacing, Ned B. Hoffman, Fort Worth, $42,874;

El Paso—U.S. 80, C 2-1-24, hot mix asphaltic concrete pavement resurfacing, Vowell Construction Co., El Paso, $80,034;

Goliad—FM 1726, S 1712(1), grading, structures, base and surfacing, Thomas & Ratliff, Rogers, $77,964;

Johnson—FM 1705, S 1532(1), grading, structures, base and surfacing, John F. Buckner & Son, Cleburne, $67,722;

Gillespie—FM 1631, S 1689(1), grading, structures, base and surfacing, Killian-Keller, San Antonio, $79,790;

Parmer—FM 1731 and 1796, S 1574(1) and R 1634-4-1, grading, structures, base and surfacing, Bell, Braden, Barker & Gilvin, Amarillo, $144,139;

Jefferson—U.S. 90, UI 56(2), grading, drainage, concrete pavement and Pine Street interchange, Trotti & Thomson, Beaumont, $226,128;

Hale—U.S. 70, F 568 (21) and (22), grading, structures, flexible base and hot mix asphalt concrete pavement, Cooper & Woodruff & Tecon Construction Co., Dallas, $698,982;

San Augustine—U.S. 96, F 317(13), flexible base and two-course surface treatment, Pioneer Truck & Construction Co., Grapeland, $99,135;

Henderson—FM 1617, S 1635(1), grading, structures, base and surfacing, Adams Brothers, Kaufman, $75,096;

Cooke—FM 1630, S 1544(1), grading, structures, base and surfacing, John T. Leslie, Dallas, $43,619;

Orange—U.S. 90, F 1091(5) and FI 1091 (4), Sabine Railroad relocation, Little Cypress Bayou and Coopers Gulley branch, John F. Buckner, Cleburne, $316,845;

Liberty—S.H. 105T and FM 787, S 1751 (1) and C 813-1-7, grading, structures, flexible base and two-course surface treatment, Campbell & Kay, Tyler, $123,855;

Fort Bend—FM 1640, S 1568(1) and C 1683-1-1, grading, structures, base and surfacing, Holland Page, Austin, $38,862;

Hardin—FM 1122, S 1798(1), grading, structures, base and surfacing, E. W. Hable & Sons, Corsicana, $69,893;

DeWitt—FM 983, S 1380(1), grading, structures, base and surfacing, D. R. Cloud & Son, San Antonio, $87,739;

Houston—FM 227, S 705(2), grading, structures, base and surfacing, T. R. Vardeman & Son, Nacogdoches, $90,263;

Shelby—FM 1645, S 1655(1), grading, structures, base and surfacing, T. R. Vardeman & Son, Nacogdoches, $90,299;

Titus and Morris—S.H. 11, C 83-9 and 10-8 and 8, Swanano and Boggy Creek bridges and approaches, Ernest Loyd, Fort Worth, $171,334;

Van Zandt—S.H. 243, C 522-2-7, grading, flexible base and asphalt pavement, Joe Davidson, Terrell, $210,586;

Live Oak—U.S. 261, C 254-1-20, widening, grading, base and asphalt surface shoulders, South Texas Construction Co., Corpus Christi, $40,710;

Atascosa—S.H. 97, C 328-4-9, grading, structures, flexible base and one-course surface treatment, Killian-Keller, San Antonio, $85,041;

Bee—U.S. 181, C 101-1 and 2-16 and 13, grading, structures, widening, base and asphalt pavement, South Texas Construction Co., Corpus Christi, $247,447;

Jefferson—FM 365, C 932-1-6, Hillebrandt Bayou, Rodair Gully & Main "C" Canal bridges and approaches, Harry Newton, Graham, $241,660;

Harrison—FM 1793, R 1759-1-1, grading, structures, base and surfacing, Campbell & Kay, Tyler, $85,464;

Anderson—U.S. 287 and 79, C 109-1 and 2, 4 and 3, and C 205-7-17, asphaltic pavement, Gaylord Construction Co., Houston, $87,741;

Starr & Zapata—U.S. 83, C 38-6, 5 and 4-9, 8 and 16, clearing and grubbing, fencing and appurtenances, D. H. Buchanan, Temple, $93,212;

Burleson—S.H. 36, C 186-3 and 4-10 and 7, concrete pavement, widening and asphaltic pavement, L. H. Lacy, Dallas, $53,465;

Reeves and Ward—U.S. 80, C 308-22 and C 4-1 and 2-14 and 14, additional surfacing, Ned B. Hoffman, Fort Worth, $91,424.

Oklahoma Road Awards

(Continued from page 14)

S.H. 20, 7.601 miles 10-inch soil sub base, 8-inch stabilized rock base 40 feet wide, 24-foot double bituminous paving, 5-foot primed shoulders, Skiatook west, estimated cost, $218,530.75; Layman & Sons, Tulsa, $195,882.29;

Osage—S-385 (5) S.H. Pt. 2 Surf; S.H. 20, .471 mile 42-foot roadbed, 10-inch soil sub base, 8-inch stabilized rock base, double bituminous and concrete paving in Skiatook west to connect with above project, estimated cost, $77,325.11; Layman & Sons, Tulsa, $75,272.40;

Osage—S-386 (5) S.H. Br: S.H. 20, .134 mile for four piers and abutments of sub-structures for 418-foot steel bridge on Hominy creek and 261-foot steel bridge on Quapaw creek and reinforced concrete culverts on above projects, estimated cost, $111,810.02; J. A. Raines, Muskogee, $120,244.44;

Ellis—SAP-663 (5) Pt. 1: U. S. 283, 7.465 miles 26-foot roadbed, 8-inch asphaltic stabilized base, 24-foot single bituminous paving, 6-foot primed shoulders, from S.H. 15, north, estimated cost, $225,317.08; R. R. Ryan Construc-

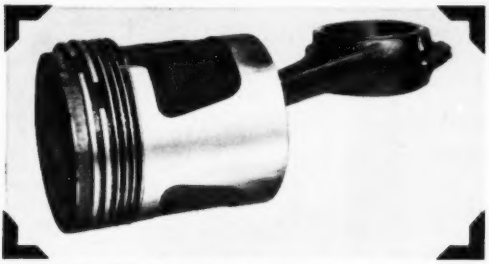
(Continued on page 18)

STANDARD ENGINEER'S REPORT

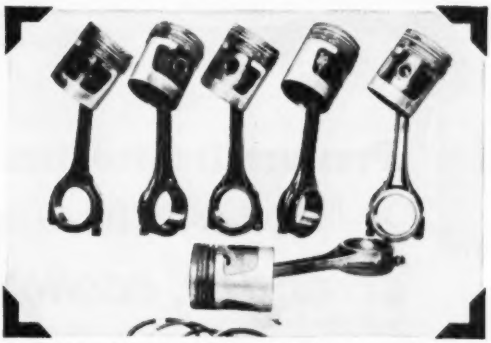
DATA

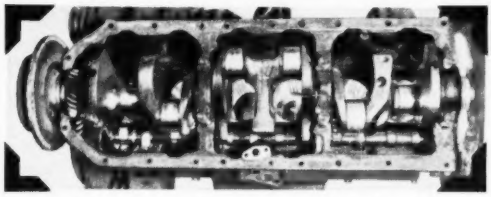
LUBRICANT RPM Delo Oils
UNIT 1½ ton truck – 6 cyl. Ford-Model F5 engine
CONDITIONS Low engine temperatures – city deliveries
PERIOD 2 years
FIRM Pacific Cheese Division of Bordens, San Francisco, Cal.

Only 0.004 inch wear in 68,740 miles stop-and-go driving!



LUBRICATED WITH RPM DELO SPECIAL OIL, these pistons from an engine overhauled for the first time after two years and nearly 70,000 miles of tough delivery-service operation, had no broken or stuck rings. Grooves were clean and all oil-return holes open. All bearings, including mains, were in good condition. Reboring of the cylinders was not necessary because none of the six cylinders was out of round and taper ran only 0.004 to 0.0045 inch.





THE ENGINE WAS EXCEPTIONALLY CLEAN as this picture indicates. Cylinder walls were free of lacquer and there were no deposits in valve chambers. Only a thin carbon film was in the bottom of the pan. Valves, pistons, bearings, all parts except rings, were put back in service.

REMARKS: This engine was used in Sacramento under widely varying temperatures. Its stop and go operation seldom allowed engine temperatures to reach normal. There is an RPM DELO Lubricating Oil to meet every heavy-duty engine operating condition.

FREE BOOKLET on the RPM DELO Oils gives you complete information. Write or ask for it today.

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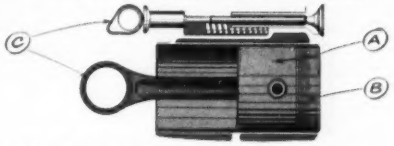
How RPM DELO Oils meet tough operating conditions



A. Contain special additives that provide metal-adhesion qualities...keep oil on parts whether they are hot or cold, running or idle.

B. Antioxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean, helps prevent scuffing.

C. Special compounds stop corrosion of any bearing metal, and oil foaming in both wet and dry sump engines.

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TRADEMARK "RPM DELO" REG. U.S. PAT. OFF.

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RUTLEDGE OIL COMPANY

3261 ROANOKE ROAD, KANSAS CITY 8, MISSOURI

Oklahoma Road Awards

(Continued from page 10)

tion Co., Oklahoma City, $232,309.03;

Ellis-Harper—SAP-663 (5) Pt. 2: U. S. 283, 5.426 miles similar construction on continuation of above project to U. S. 270, estimated cost, $128,350.80; R. R. Ryan Construction Co., $131,544.52;

Johnson-Marshall — SAP-825 (3), S.H. 99, 5.596 miles 34-foot roadbed, 6-inch soil sub base, 10-inch stabilized rock base full width of roadbed, blended rock asphalt paving, 5-foot single bituminous paved shoulders from 1¾ mile northeast of U.S. 70 in Madill, extending northeast across Johnston county line, estimated cost, $263,859.31; H. D. Youngman, Baxter Springs, Kans., $240,393.11;

Johnston—SAP-831 (3) Pt. 1 Surf: S.H. 7, 7.700 miles 9-12 inch stabilized rock base, 22-foot blended rock asphalt paving, 3-foot single bituminous paved shoulders from S.H. 99, east, estimated cost, $224,200.99; Park-Ward, Oklahoma City, $193,906.22;

Johnston—SAP-831 (3) Pt. 2 Surf: S.H. 7, 6.375 miles similar construction; Park-Ward, $196,030.23;

Cotton—S-716 (1) S.H.: S.H. 65, 7.794 miles 38-foot roadbed from Temple south, estimated cost, $72,672.79; Elliott Brothers, Perry, $78,876.44. Disapproved.

Washita—SAP-1076 (1), S.H. 66A, .731 mile 32-78-foot roadbed, 6-inch soil sub base, 6-inch asphaltic stabilized base full width of roadbed, 22-78-foot single bituminous paving, 100-foot concrete slab span bridge 26 feet wide on Turkey creek, 75-foot similar design overflow bridge from U.S. 66 to north to Foss; H. R. Landt, Oklahoma City, $116,016.39.

Lone Star Steel Plant

(Continued from page 12)

Enterprise Company, roller conveyor units, 2,660;

Marley Company, Inc., water cooling tower;

Palmer-Bee-Co., hot coil conveyor system;

Mathews Conveyor Co., cold coil conveyor system;

Wallace & Tiernan Co., Inc., dry chemical feeders, three; chlorinators, two;

Chicago Pump Co., screening and cutting mechanism;

Standard Tool & Machine Co., hot metal charging spouts, two;

Kling Brothers Engineering Works, pipe cut-off saws, two;

Viking Pump Co., fuel oil pumps, four;

Industrial Ovens, Inc., ingot mold drying oven;

G. & W. Electric Specialty Co., oil switch and fuse combination;

Fate-Root-Heath Co., stock yard locomotives, three;

George Koch Sons, Inc., pipe coating machines, four;

Standard Tool & Machine Co., slag pot bails and stands, two;

Infilco, Inc., water conditioning unit;

John Collinger, Jr., Inc., roll storage racks, four;

Link-Belt Co., No. 1 pipe mill colling and transfer tables;

Pennsylvania Transformer Co., 500 kva transformers for pump station, two.

Above—$2,500,000 wharf nearing completion at the North Carolina port of Morehead City.

Southern Contracts Valued at $436,743,000

SOUTH'S CONSTRUCTION BY TYPES

	February, 1952		Contracts Awarded First Two Months 1952	Contracts Awarded First Two Months 1951
	Contracts Awarded	Contracts to be Awarded		
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$2,421,000	$9,675,000	$9,879,000	$13,802,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	2,199,000	4,435,000	8,150,000	17,801,000
Residential (Apartments, Hotels, Dwellings)	54,639,000	69,740,000	91,277,000	170,606,000
Office	3,297,000	9,452,000	9,951,000	19,239,000
	$62,556,000	$93,302,000	$119,257,000	$221,448,000
INDUSTRIAL	$195,927,000	$274,239,000	$259,116,000	$1,198,003,000
PUBLIC BUILDING				
City, County, State, Federal and Hospitals	$53,305,000	$97,262,000	$126,981,000	$69,389,000
Schools	24,908,000	49,329,000	48,309,000	67,966,000
	$78,213,000	$146,591,000	$175,290,000	$137,355,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	$38,512,000	$822,264,000	$92,764,000	$52,544,000
Federal, County, Municipal Electric	8,758,000	32,460,000	17,925,000	8,315,000
Sewers and Waterworks	10,370,000	30,512,000	20,090,000	24,593,000
	$57,640,000	$885,236,000	$130,779,000	$85,452,000
ROADS, STREETS, BRIDGES	$42,407,000	$583,753,000	$75,362,000	$82,075,000
TOTAL	$436,743,000	$1,983,121,000	$759,804,000	$1,724,333,000

Below—$2,000,000 finishing plant being constructed at Tryon, N. C., by Kilburn Mills. Lockwood Greene Engineers, Inc., New York and Spartansburg, are the architects and engineers. Fiske-Carter Construction Co. is the contractor.

SOUTHERN construction awards last month were valued at $436,743,000, making the total for the year so far $759,804,000. Devoid of the inflationary effect of the two huge atomic energy projects in South Carolina and Kentucky, the January-February figure is a substantial decline from the level at this time last year.

The two-month total embraces $259,116,000 for industrial construction, $175,290,000 for public building, $130,779,000 for heavy engineering type construction, $119,257,000 for private building, and $75,362,000 for highways and bridges. Public building and the heavy work represent increases of twenty-seven and fifty-three per cent, respectively.

While the $259,116,000 industrial valuation for the elapsed period of 1952 seems comparatively low, it emphasizes the tremendous expansion which the South experienced in the earlier months of last year. This is further stressed by the fact that the two-month average in this field for the prior five years was $74,373,000.

Public building, the $175,290,000 valuation of which is one of two showing greater strength this year, includes $48,309,000 for schools. This latter is twenty-eight per cent below the value prevailing at the end of the first two months of last year. Much of the favorable difference is the result of increased federal building.

Heavy engineering construction, the other category where an increase was recorded, embraces $92,764,000 for dams, drainage, earthwork and airports; $20,090,000 for sewer and water work, and $17,925,000 for government electric projects. The dams-drainage-earthwork-airport work is up seventy-six per cent.

(Continued on page 20)

Above—New $6,500,000 office building occupied by Tennessee Coal and Iron division of United States Steel Co. Daniel Construction Co., Inc., of Greenville, S. C., and Birmingham, Ala., were the contractors.

SOUTH'S CONSTRUCTION BY STATES

	February, 1952 Contracts Awarded	February, 1952 Contracts to be Awarded	Contracts Awarded First Two Months 1952	Contracts Awarded First Two Months 1951
Alabama	$8,431,000	$37,650,000	$20,308,000	$97,456,000
Arkansas	3,753,000	44,464,000	5,027,000	13,950,000
District of Columbia	559,000	104,708,000	3,943,000	4,163,000
Florida	35,899,000	71,925,000	77,726,030	67,826,000
Georgia	39,365,000	89,700,000	56,357,000	25,132,000
Kentucky	3,783,000	11,480,000	29,268,000	362,925,000
Louisiana	64,013,000	11,290,000	104,568,000	144,953,000
Maryland	68,948,000	482,295,000	88,020,000	127,924,000
Mississippi	7,112,000	10,030,000	26,261,000	21,935,000
Missouri	7,614,000	195,175,000	15,674,000	69,224,000
North Carolina	48,092,000	18,980,000	59,941,000	33,023,000
Oklahoma	14,237,000	34,107,000	25,722,000	18,792,000
South Carolina	7,458,000	10,035,000	19,083,000	380,932,000
Tennessee	8,912,000	35,660,000	29,025,000	43,221,000
Texas	103,870,000	125,661,000	161,095,000	242,072,000
Virginia	13,717,000	353,835,000	37,034,000	44,282,000
West Virginia	80,000	346,066,000	752,000	26,523,000
TOTAL	$436,743,000	$1,983,121,000	$759,804,000	$1,724,333,000

Above—Five-story experimental sciences building erected at the University of Texas at a cost of approximately $4,272,000. The structure is 484 feet long, 69 feet wide and was designed by Broad & Nelson, Dallas architects, with the Philadelphia firm of Hough, Livingston and Larson, the consultants. Supervising architect was R. L. White, professor of architecture and planning. Nathan Wohlfield, of Dallas, was the contractor. The building is reinforced concrete backed by tile, with a stone and brick veneer.

Below—New $1,000,000 plant recently completed at Dallas, Texas, by National Container Co. A $200,000 corrugating machine capable of producing box material at 450 feet a minute is installed.

Southern Contracts Valued at $436,743,000

(Continued from page 19)

Government electric work more than doubled, while sewer and water work declined.

Private building was down compared with last year. The actual drop was from $221,448,000 in the first two months of 1951 to $119,257,000 in the similar period of the current year, or in terms of percentage, forty-six. Residential work was the influencing factor from the dollar viewpoint. The total for such work in the first two months of last year was $170,606,000; this year so far, $91,277,000.

Other components in the current private building total were $9,879,000 for assembly buildings, this including churches, theatres and auditoriums; $9,951,000 for office buildings, and $8,150,000 for commercial buildings. At this time last year, the totals were $13,802,000, $19,239,000, and $17,801,000, respectively.

Highways and bridges in the two months have amounted to $75,362,000, as compared with $82,075,000 for the same period of last year. However, four lettings scheduled during last month and not included because of delayed returns, will probably bring the level up to approximately the same as its 1951 counterpart.

February's $436,743,000 total for southern construction is up thirty-five per cent when compared with the figure for the preceding month. It is down, however, if placed alongside the $641,867,000 for last year's same month, which was one of four that helped skyrocket the level of 1951 construction to its all-time peak.

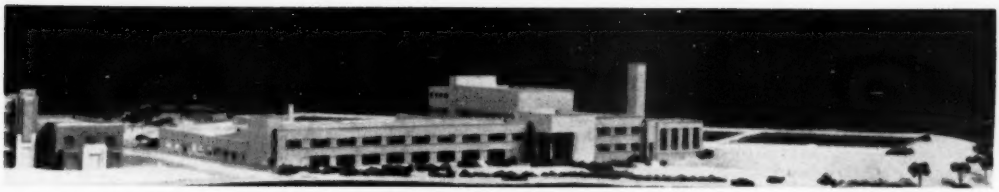
The February figure included $195,927,000 for industrial construction; $78,213,000 for public building; $62,556,000 for private building; $57,640,000 for heavy engineering type construction, and $42,407,000 for highways and bridges.

Industrial construction showed more vigor during February. The total is more than three times the size of the valuation placed on such projects in the preceding month. Notable expansions reported were a $30,000,000 synthetic fiber plant at Spray, N. C., a $52,000,000 paper plant in Tennessee; a $15,000,000 project at the Southland Paper mill in Texas; additional work at the Rockdale, Texas, aluminum plant and a $25,000,000 Georgia plant for Rayonier, Inc.

Two other classifications showed rises in February. Private building, with its $62,556,000 total, represented an increase of ten per cent. The twenty-eight per cent rise of highway and bridges when compared with the total for the preceding month will be enlarged by inclusion of several large lettings scheduled for the last day of the month and not yet reported when these figures were tabulated.

Private building in February showed greater strength than the two months it followed. Residential work, the largest element in the total, amounted to $54,639,000, a rise of forty-nine per cent above the value placed on such work in January. The other three categories dropped. Their totals were: Office building, $3,-

(Continued on page 54)



Above—Druid Park Drive elevation of proposed $10,000,000 Baltimore filtration plant, which will have a capacity for treating 120,000,000 gallons of water daily from the new Patapsco River lake.

Baltimore Proposes $10,000,000 Filtration Plant

Baltimore, which recently has finished a 17-mile tunnel and now has a $5,000,000 dam under construction, will soon take additional steps in a program to free itself from a one-source water supply by completing plans for a $10,000,000 filtration plant and asking bids on construction of bridges to replace those inundated by the lake to be impounded behind the dam known as the Liberty project.

Money for the four bridges proposed across the new reservoir is now available. The cost is estimated at about $4,000,000. Lengths of the spans will range from 600 to 1,800 feet. Plans for the bridges are now being completed by J. E. Greiner Co., Baltimore consulting engineers, with Othello H. Schroedl, bridge engineer of Baltimore, acting as consultant for the Bureau of Water Supply.

Bonds Yet to be Voted

Construction of the filtration plant is contingent upon the favorable action of Baltimore citizens, who will be asked to vote on an additional block of bonds to finance that structure. One-half of a $45,000,000 bond issue, which several years ago was authorized by the Maryland State Legislature, has to be used to finance completion of the tunnel to the new Patapsco River site, construction of the Liberty dam there and for purchase of property and water rights.

The proposed filtration plant is to be located at Liberty Heights Avenue and Druid Park Drive, where a 10-foot diameter raw water tunnel stretching the twelve and one-half miles from the Patapsco River joins a seven-foot filtered water tunnel extending the four or more miles to the Montebello filters, where water from the Gunpowder River is now treated and delivered into the local distribution system.

120,000,000 Gallons Daily

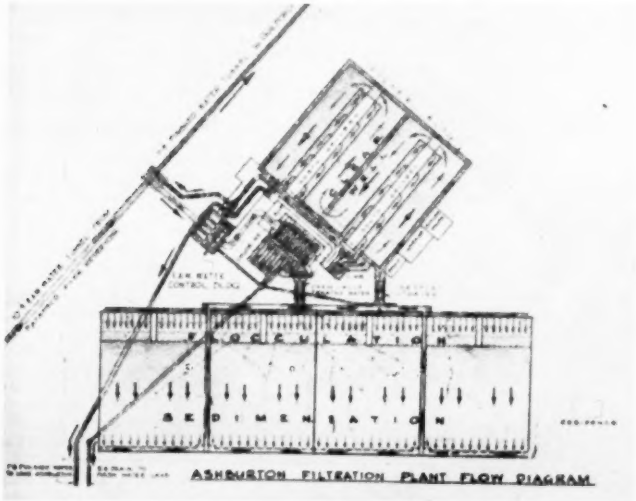
Designs for the 120,000,000 gallon daily plant proposed at Ashburton are now being made prepared by the local engineering firm of Whitman, Requardt and Associates, with Roy H. Ritter in charge of the division. The plant is part of the Patapsco Water Supply project being carried out under the D'Alesandro administration with Paul L. Holland, director of public works, J. S. Strohmeyer, water engineer, and Bernard L. Werner, deputy water engineer.

The 12-acre site upon which the plant will be built is in the vicinity of the existing 200,000,000-gallon-daily Ashburton reservoir, from which water pumped from the lower first or gravity zone is distributed into a second zone, which with three other higher zones consume forty-three per cent of the local water supply. Due to a 50-foot difference in elevation of the Liberty dam spillway crest and the entrance to the proposed Ashburton plant, about sixty-five per cent of the 43,000,000,000-gallon Liberty dam lake will flow without pumping to the new filtration plant.

Location of the proposed plant will make it possible to use the Ashburton filtered water reservoir as a clear well for the new operations. Level of the lake fluctuates but one foot daily and it is believed that the 30-foot deep lake can be maintained at least ninety per cent full. Reducing the freeboard from six to three feet will increase its capacity by about ten per cent.

During a recent discussion of the design of the proposed facilities, Mr. Ritter described the raw water control building, chemicals buildings, flocculation and sedimentation, filters and clear well, as follows:

Below—Flow diagram from the proposed plant, showing how the raw water will enter the control building, the chemical treatment facilities and clear well in the square and the flocculation and sedimentation tanks across the lower part of the illustration.



Proposed Facilities Described

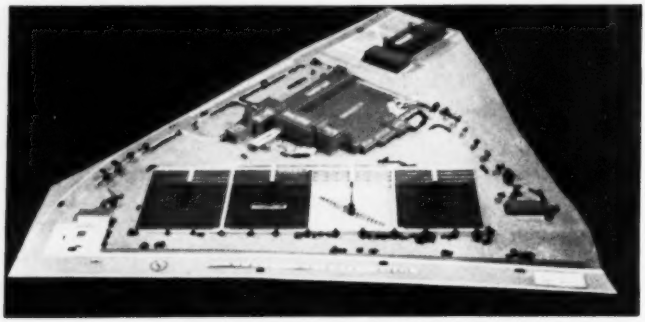
Raw Water Building—Raw water from the existing 10-foot tunnel and shaft will pass through the raw water control building where four 30-inch throttling valves will reduce the pressure about 40 feet when the dam is filled. A seven-foot diameter surge tower with its top 15 feet above the crest of the dam will be connected to the valve maniford on the 10-foot raw water tunnel. One 10-foot by five-foot raw water meter with a range of 24 to 240 m. g. d. will be installed.

Chemicals Buildings—Ton cylinders of chlorine will be used which are now delivered commercially by trucks. Four chlorine evaporators, three 6,000-pound chlorinators and three chlorine residual recorders will be installed for pre-chlorination and post-chlorination. It is believed that post-chlorination will not normally be required.

Water will pass from the raw water meter into a mixing basin providing 10 minutes of detention and 20-180 degree turns.

(Continued on page 22)

Baltimore Proposes $10,000,000 Filtration Plant



Above—View of model of the proposed $10,000,000 filtration plant at Baltimore, with the flocculation and sedimentation facilities at the lower part of the picture and the chemical treatment and filter building above. The structure will be located in the angle formed by Liberty Heights Avenue, in the foreground, and Druid Park Drive, at the upper left. The building in the background is an existing school.

(Continued from page 12)

Alum solution as manufactured by the city at its Montebello filtration plant will be used at Ashburton. This alum manufacturing plant was installed many years ago by the city and the fixed costs thereon have been amortized. The present manufacturing process is operated at an average of two hours per day so that ample capacity is available to supply the Ashburton plant and future demands. The Ashburton plant is so designed that if dry alum in bulk had to be used, it could be done by adding a few screw conveyors and dry feed machines.

The 20-per cent alum solution will be diluted and applied to the raw water by means of rotometers. Six lead lined, steel conical bottom 18,000-gallon alum tanks with mechanical mixing will be provided.

One hydrofluosilicic acid tank of 6,000-gallon capacity will be provided in the basement and the acid pumped to the raw water.

Carbon in bags will be applied by means of a dry feeder when needed at infrequent intervals.

Flocculation and Sedimentation — Chemically treated water from the mixing basin will pass to four flocculating and sedimentation basins. Forty-five minutes of mechanical flocculation is provided in four basins, each 170 feet wide by 50 feet long and 15 feet deep.

Four Sedimentation Basins

The four sedimentation basins each will be 180 feet square with 16-foot sidewater depth, providing 3.6 hours of detention and an overflow rate of 930 gallons per square foot per day at their nominal capacity of 30 m. g. d.

The raw water will divide equally into each of the four basins through identical conduits and channels. In addition, the water entering the basins can be further equalized by 14 adjustable inlet and outlet slots to insure uniform distribution of the water across the width of the basins.

The basins will be drained by means of a 24-inch pipe to the wash water lake, which has a capacity of 36 m. g. or six times that of one basin. A small telescoping valve on each drain will permit visual inspection of the daily draw-off to the wash water lake.

The settled water from the sedimentation basins will flow through two flumes and conduits to form a loop of settled water around the four sides of the 20 filters, so that the water level on the filters will be only 6 inches lower than the water level in the sedimentation basins at the nominal rate of 120 m. g. d.

To Install Twenty Filters

Filters — Twenty filters will be installed, five on each side of the two galleries. Each filter will have a nominal capacity of 6 m. g. d. at two gallons per square foot per minute, but the 24-inch rate controller will have a capacity of 12 m. g. d., so that each filter can be operated, if desired, at a rate as high as 4 gallons per square foot per minute. The plant is designed to operate at 160 m. g. d., or 133 per cent of the nominal capacity continuously. However, the plant can furnish over 200 m. g. d. with minor adjustments of baffles and gates. In view of the fact that the peak days in Baltimore are only about 20 per cent greater than the yearly average, and Lake Ashburton, with 220 m. g. storage provides a clear well of extraordinary capacity. Only a major disaster would make it necessary for this plant to operate at an excessive amount above its normal capacity.

In view of the possible need to by-pass water during a major disaster, provisions will be made so that raw water from the 10-foot tunnel could be diverted at the shaft outside of the plant buildings to the 7-foot distribution tunnel by means of two valves normally separated with an air gap; chlorinated raw water could be diverted to both distribution meters by means of two sluice gates in the plant normally separated by an air gap; chlorinated settled water could be diverted to the 7-foot distribution meters by means of sluice gates normally separated by an air gap. These air gaps are drained and can be periodically inspected.

Below—Layout of the 12-acre site for the proposed $10,000,000 filtration plant at Baltimore and its proximity to Lake Ashburton.

Filters 2,100 Square Feet Each

The sand surface of each filter will be 39 feet 9 inches wide by 53 feet long, providing 2,100 square feet. Water will be supplied to the back of the filters from the settled water channel through a two-foot by three-foot sluice gate. The six wash water troughs will be two feet in width and two feet six inches in depth and will support the twelve 13-foot diameter surface agitators to be installed in each filter. A gullet four feet wide

(Continued on page 52)

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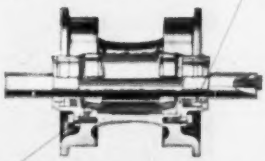

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Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

ALABAMA

ALABAMA—Alabama Power Co. plans to sell $12,000,000 bonds in April.

ANDALUSIA—South Alabama Natural Gas District has plans in progress for transmission mains and distribution systems, cost, $18,000,000.

ANNISTON—City plans runway, Municipal Airport, $85,000.

BESSEMER—City Board of Education let contract at $332,500 to F. R. Hoar & Son, Birmingham, for addition to Jonesboro Elementary School.

BESSEMER—City Board of Education let contract at $165,900 to F. R. Hoar & Son, Birmingham, for addition to Carver Negro School.

BIRMINGHAM—Shade Valley Presbyterian Church let contract to R. J. Allen Contracting Co., Birmingham, at $116,500, for building unit.

BIRMINGHAM—City Board of Education let contract at $82,725 to Wilborn Construction Co. for addition to Curry School.

BIRMINGHAM—Hunter St. Baptist Church Congregation let contract to J. F. Holley, Birmingham, at $729,945 for educational building and sanctuary.

BIRMINGHAM—S. H. Kress & Co., let contract to J. F. Holley, Birmingham, at $200,000 for remodeling.

BIRMINGHAM—City plans garage, $800,000.

CHAPMAN—W. T. Smith Lumber Co. plans log debarker and chipping plant, $350,000.

CHATOM—Washington County Hospital Association received low bid from Henderson Black & Green, Troy, at $285,000 for 26-bed hospital.

DECATUR—Housing Authority let contract to Sullivan, Long & Hagerty, Birmingham, at $783,000 for 105-unit housing project.

EVERGREEN—Conecuh County Hospital Association let contract to Andalusia Development Co., Andalusia, at $332,353, for 28-bed hospital.

GUIN—Housing Authority received low bid of $269,344 from C. G. Thompson for 36-unit housing project.

HUNTSVILLE—Corps of Engineers, Mobile, let contract to Hewitt Contracting Co., Box 1372, Columbus, Ga., at $115,335, for rehabilitation of demolition area, Redstone Arsenal.

LISTER HILL—Reynolds Metals Co. announced plans for a $2,000,000 expansion.

MONTGOMERY—City plans improvements to Donnelly Field, $150,000.

ONEONTA—Housing Authority let contract to B & R Construction Co., at $273,285, for 40-unit housing project.

OZARK—Board of Education let contract at $203,216 to Henderson, Black & Green, Troy, for addition to City School.

SHAWMUT—West Point Manufacturing Co., G. S. Davidson, Pur. Agt., West Point, Ga., let contract to Fiske-Carter Construction Co., Greenville, S. C., at $369,000, for addition to mill.

TALLADEGA—City let contract at $301,162 to H. R. Coker, Sylacauga, for waterworks filter plant and addition and raw water pumping station.

TARRANT—Rock Methodist Church plans church, $250,000.

TUSKEGEE—Tuskegee Institute plans women's dormitory, $150,000.

ARKANSAS

EL DORADO—Lion Oil Co. plans $5,000,000 expansion program at El Dorado refinery including two steam generators.

EL DORADO—City sold $585,000 bond issue to T. J. Raney & Sons, Little Rock, for repairs and extensions to sewer system.

GUM SPRINGS—Reynolds Metals Co. announced plans for $30,000,000 aluminum reduction plant; will have capacity of 110,000,000 pounds of aluminum yearly.

LITTLE ROCK—Terry Dairy Products Co. has under construction $600,000 plant, Highway 70.

NORTH LITTLE ROCK—Veterans Administration let contract to The Baldwin Co., 215 Wallace Bldg., Little Rock, at $247,519, for alterations and additions to dining hall, Veterans Hospital.

SHUMAKER—Navy Department let contract to Peterson, Garbi and Joseph E. 9th St., North Little Rock, at $976,400, for civilian barracks, 500-man capacity, Naval Ammunition Depot.

DISTRICT OF COLUMBIA

WASHINGTON—Boys' Club of Washington plans addition, $222,600.

WASHINGTON—New Temple Committee plans new building, $1,500,000.

WASHINGTON—Sherwood Presbyterian Church Congregation plans auditorium and Sunday School, $225,000.

WASHINGTON—Brookland Baptist Church Congregation plans new building, $250,000.

WASHINGTON—Brightwood Park Methodist Church plans new building, $115,000.

FLORIDA

Corps of Engineers received low bid of $696,488 from Hendry Corp. of Rattlesnake and Arundel Corp. of Baltimore for dredging intracoastal waterway from Flagler Beach to Oak Hill.

BARTOW—Polk County Board of Public Instruction will receive bids April 9 on $6,000,000 bond issue for school improvements.

Below—Allis-Chalmers tractor with Tractomotive TR-5 ripper shown working sand clay on a project in Durham County, North Carolina. Owned by W. S. Carver, the machine is operated by Charles R. Godwin, of Durham.

CHATTAHOOCHEE—Corps of Engineers received low bid of $13,907,379 from Perini-Walsh-Mills & Blythe Bros. Construction Co., P. O. Box 308, for gates spillway, powerhouse and switchyard, Jim Woodruff Dam.

CLEARWATER—Pinellas County Board of Public Instruction, 305 Haven, let contract at $208,824 to Clearwater Construction Co., 300 N. Osceola Ave., for elementary school.

COCOA—Corps of Engineers, Jacksonville, received apparent low bid from Bradford Builders, Inc., 1101 Lincoln Road Bldg., Miami Beach, at $515,790, for buildings, Missile Test Center.

COCOA—Corps of Engineers, Jacksonville, received low bid of $634,537 from Leifert Construction Co., Miami, for airmen's dormitories, Missile Training Center.

DADE COUNTY—North Dade Hospital, Inc., Miami, selected Cedric Start & Donald H. Moeller, 1457 Jackson St., Hollywood, as Archts., for 100-bed hospital, $800,000 to $1,000,000.

DADE COUNTY—Cravero Constructors, Inc., 11295 Biscayne Blvd., Miami, will build 67 dwellings, $491,700.

DUNEDIN—Pinellas County Board of Public Instruction, Clearwater, let contract at $191,999 to Pennington Construction Co., Petersburg, for elementary school.

EGLIN FIELD—Corps of Engineers, Mobile, Ala., let contract to Triangle Construction Co., Tallahassee, at $160,644 for clearing, grading and drainage.

FLAGLER BEACH—Town let contract for municipal water system, water distribution system and intra-coastal waterway crossing, J. W. Meadors, 1306 Hollywood Ave., Jacksonville, $84,756; elevated steel water tank, Whitmire Tank Co., 2226 W. Beaver, Jacksonville, $29,915.

FORT PIERCE—Naco Fertilizer Co., Kenneth D. Morrison, Pres., plans $650,000 fertilizer mixing plant, Old Dixie Highway; capacity of 75,000 tons yearly.

GAINESVILLE—Board of Commissioners of State Institutions, State of Florida, Capitol Bldg., Tallahassee, let contract to Kirkpatrick & Pierson, at $136,800, for apartment building and additions to infirmary, Florida Farm Colony.

GRACEVILLE—West Florida Electric Cooperative Association has $415,000 REA loan for 96 miles of distribution line.

JACKSONVILLE—Duval County Board of Public Instruction, 605 Ocean St., received low bid of $315,092 from Beerbower & Parker for three schools.

KEY WEST—Resident Officer-in-Charge of Construction, U. S. Navy, Bldg. 91, received low bid from M. E. Bennett, 214 Duval St., Key West, at $194,420, for building repairs, Naval Station.

MIAMI—Columbus Hotel Corp. let contract to Maurice H. Connell & Assocs., Inc., 200 Lamgford Bldg., Miami, at $240,000 for air conditioning hotel, 36 Biscayne Blvd.

MIAMI—City Commission received low bid from M. S. Construction Co., 5410 N.W. 14th Ave., Miami, at $143,231, for additions to garage, 1010 N.W. 20th St.

MIAMI—St. Sohpia Hellenic Orthodox Community Center, 2401 S.E. 3rd Ave., let contract to C. D. Smith Const. Co., 306 N.W. 27th Ave., at $150,000, for community center.

MIAMI BEACH—City received low bid of $145,975 from Chicago Bridge & Iron Co., 57 Forsyth St., Atlanta Ga., for reservoir No. 1.

NORTH BAY VILLAGE—Bratthauer-Walker Co., 1480 N.E. 131st St., North Miami, will construct two apartment buildings, eight units, $120,000.

ORLANDO—Corps of Engineers, Jacksonville, received low bid from Ronlee, Inc., 3907 N.W. 27th Ave., Miami, at $490,446, for bachelor officers' quarters, Pinecastle.

ORLANDO—Corps of Engineers, Jacksonville, received low bid from R. E. Clarson, Inc., St. Petersburg, at $231,800, for bachelor officers' quarters, Pinecastle.

ORLANDO—Corps of Engineers, Jacksonville, received low bid from Southern Construction Co., Daniel Field, Augusta, Ga., at $169,898, for parachute building and dinghy shop, hydrogen-oxygen storage building, and radar trainer building.

ORLANDO—Corps of Engineers, Jacksonville, received low bid from Southern Construction Co., Augusta, Ga., at $131,695, for physiological trainer building and briefing buildings.

ORLANDO—General Services Administra-

(Continued on page 26)

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Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

FLORIDA

(Continued from page 24)

tion, Washington, D. C., will receive bids sometime in April for horticultural field station (Citrus Research Laboratory), Department of Agriculture; $275,000.

SURFSIDE—Chaves Construction Co., 1575 Washington Ave., Miami Beach, will construct 56-unit apartment building, $340,000.

TALLAHASSEE — Florida Power and Light Co. plans $22,100,000 construction budget for 1952; will spend $332,000,000 on plant and system expansion during next 10 years.

TAMPA—Tampa Electric Co. plans $7,000,000 expansion, part of $52,000,000 construction program for next five years.

TAMPA — Corps of Engineers, Jacksonville, let contract to C & C Construction Co., 2001 E. Pontiac St., Fort Wayne, Ind., for sewer system treatment plant, $400,000.

WEST PALM BEACH — Corps of Engineers, Jacksonville, let contract to Paul & Son, 921 Ortega Rd., West Palm Beach, at $111,800, for rehabilitation of 11 buildings.

GEORGIA

ALBANY — Navy Department, Public Works Office, Charleston, S. C., received apparent low bid from Smith Gray Electric Co. & Georgia Electric Co., Albany, at $697,-210, Item 1, and at $757,432 on Item 2, for electrical distribution system, Marine Corps Depot.

AMERICUS — Housing Authority let contract to Beers Construction Co., 70 Ellis St., Atlanta, at $354,745, for housing project.

ATHENS — University System Committee, Atlanta, plans indoor athletic coliseum at University of Georgia, $1,500,000 to $2,000,-000.

ATLANTA—Atlantic Steel Co. let contract to Strother-Barge Co., 189 Cain, N.E., for new warehouse and office building, $300,000.

AUGUSTA — Veterans Administration received apparent low bid of $472,986 from Johnson & Johnson Construction Co., P. O. Box 61, Rome, for laundry building No. 95.

BYRON — Navy Department considering establishing Naval Supply Center near Byron; would cost in excess of $50,000,000.

CLAYTON COUNTY—Board of Education received low bid of $257,502 from Central Construction Co., Decatur, for Forest Chapel Negro School.

COBB COUNTY—Cobb County Board of Education, Marietta, let contract at $161,-929 to Abco Builders, Atlanta, for Osborne School.

CORNELIA — Housing Authority received low bid of $164,308 from Pressley Construction Co., Toccoa, Ga., for housing project.

DOCTORTOWN — Rayonier, Inc., 122 E. 42nd St., New York, N. Y., announced plans for pulp mill, cost approximately $25,000,000; will be capable of producing 250 tons a day of purified wood cellulose.

FULTON COUNTY—Fulton County Commissioners let contract to Griffith & Monthead, 33 Hunter St., S.W., Atlanta, at approximately $127,630 for hangar, County Airport.

GRIFFIN — City received low bids for waterworks improvements, Division 1, Fiske Carter Construction Co., Spartanburg, S. C., $84,305; Division 2, Buford, Hall & Smith, Atlanta, $224,976; Division 3, J. B. McCrary & Co., Atlanta, $231,701; Division 4, R. D. Cole Mfg. Co., Newnan, $167,440.

GRIFFIN—City sold $2,500,000 bond issue for waterworks.

JESUP—Housing Authority received low bid of $316,665 from John H. Smalling, 3782 Ridge Ave., Macon, for housing project.

PELHAM — Housing Authority received low bid of $469,900 from Culpepper & Edwards, Pelham, for low rent housing projects.

SAVANNAH—Corps of Engineers let contract to P & W Construction Co., Hurt Bldg., Atlanta, at $293,971, for fuel storage facilities, Hunter Field.

VALDOSTA—Corps of Engineers, Savannah, received low bid from J. D. Manly Construction Co., Leesburg, Fla., at $180,510, Total No. 1, and at $148,626, Total No. 2, for runway marking, Moody Field.

VALDOSTA—Housing Authority received low bid of $1,647,000 from A. B. Newton & Co., Vidalia, Ga., for housing projects, Ga-100-3 and Ga. 100-4.

KENTUCKY

BOWLING GREEN—Warren Rural Electric Cooperative Corporation has $710,000 REA loan for 410 miles of distribution line serving 1,408,000 new rural consumers and system improvements.

LOUISVILLE—Frick Co., 320 Broadway, Waynesboro, Pa., will supply refrigeration equipment necessary for the cold rubber installation at Copolymer plant operated by Kentucky Synthetic Rubber Corp.; Construction cost estimated at $1,300,000; Kaighin & Hughes, Inc., Toledo, Ohio, engaged to engineer and construct the required facilities.

LOUISVILLE—Smith, Barney & Co. and Assocs. were sold $4,000,000 bonds of the Metropolitan Sewer District of Louisville and Jefferson Counties.

LOUISIANA

ALEXANDRIA — U. S. Engineer Office, Little Rock, let contract to W. A. Gray Construction Co., P. O. Box 626, Shreveport, at $190,000, for general warehouse building, Air Base.

ALEXANDRIA — U. S. Engineer Office, Little Rock, received low bid from Southern Builders, Inc., P. O. Box 1815, Shreveport, at $153,080, on Lot 1, and from Sandel & Lastrapes, 588 St. Vincent Ave., Shreveport, at $15,986 on Lot 2, Air Base.

ALEXANDRIA—Corps of Engineers, Little Rock District, Little Rock, Ark., let contract to Hooter Brothers, Alexandria, at $146,560 for conversion of heating system to natural gas, Alexandria Base.

BALDWIN—St. Mary Parish let contract at $121,000 to Magnolia Construction Co., P. O. Box 1973, Baton Rouge, for wells, distribution system, pump house, water softening equipment, pumping and necessary connections.

BATON ROUGE—Esso Standard Oil Co. announced plans for a $16,000,000 expansion program in addition to the $35,000,000 expansion program announced last fall.

BOGALUSA—Housing Authority let contract to M. T. Reed Construction Co., P. O. Box 1066, Jackson, Miss., at $533,233, for two low rent housing projects.

CHALMETTE — Perrilliat-Rickey Construction Co., Inc., 1530 S. Rendon St., New Orleans, received low bid at $257,500 for Our Lady of Prompt Succor Parochial School.

HOUMA—Terrebonne Parish Police Jury recommended award of contract to Dye & Mullings, Inc., P. O. Box 485, Columbia, at $1,064,868, for 3-story, 100-bed Parish General Hospital.

JENNINGS — Jeff Davis Parish School Board sold $600,000 school bond issue to Equitable Securities Corp. & Associates.

KAPLAN — Housing Authority received low bid of $208,711 from A. Miller & Sons, Lake Charles for housing project.

LEESVILLE—Vernon Parish School Board let contract at $249,444 to McMichael Construction Co., Shreveport, for 20-classroom elementary school.

MARKSVILLE — Housing Authority let contract to S. J. Lemoine & Co., Bunkie, La., at $304,388, for low rent housing projects.

MINDEN—Webster Parish School Board approved $800,000 bond issue for school improvements.

MINDEN—City Council will receive bids April 7 for $130,000 waterworks and $190,-000 sewer bond issue.

NEW IBERIA — Iberville Parish School Board, Plaquemine, let contract to E. E. Rabalais & Sons, P. O. Box 59, Bunkie, at $186,000, for new Iberville High School.

NEW ORLEANS—Corps of Engineers let contract to R. P. Farnsworth & Co., Inc., 1515 S. Salcedo St., at $459,168, for Dumaine St. floodwall.

NEW ORLEANS — Mt. Zion Methodist Church Congregation let contract to W. L. Gremillion, 5087 Evangeline St., Baton Rouge, at $137,000, for building.

NEW ORLEANS—Board of Port Commissioners let contract to Fegles Construction Co., Minneapolis, Minn., at $5,635,000 for addition to public grain elevator of the Port of New Orleans; Blount Brothers Construction Co., Montgomery, Ala., has contract at $791,-000 for foundations for storage structure, head house, car dumpers, and appurtenant structures.

NEW ORLEANS — Sewerage and Water Board of New Orleans received low bid of $100,150 from A. N. Goldberg, Inc., for sewer force main, Contract No. 326-S and Mike Cullen, 3948 Pauger St., at $99,900 for sewers.

NEW ORLEANS — First Baptist Church Congregation plans building, $300,000.

NEW ORLEANS — Housing Authority received low bid of $6,182,000 from R. P. Farnsworth & Co., 1515 S. Salcedo St., for housing project.

NEW ROADS—Mayor and City Council received low bids for water distribution, sewage collection system and sewage pumping stations, Sullivan, Long & Hagerty, Birmingham, Ala., at $152,111 for sewage system; $155,889 for water distribution system and $38,300 for pumping stations.

OAKDALE — Housing Authority received low bid of $470,111 from T. Miller & Son, Box 636, Lake Charles for housing project.

SHREVEPORT—City Council let contract at $250,200 to R. P. Farnsworth & Co., Inc., for additions to Cross Lake Water Plant and E. W. Bacharach & Co., Kansas City, Mo., at $50,285 for installation of filtering units at pumping station.

SHREVEPORT—State Division of Administration, Baton Rouge, let contract to Southern Builders, Inc., P. O. Box 1815, Shreveport, at $1,086,000 for 7-story nursing school near new Confederate Memorial Medical Center.

MARYLAND

Governor Theodore R. McKeldin recommended a $22,725,000 bond issue for new construction, equipment and other capital additions.

Board of Directors of Chesapeake and Potomac Telephone Co. of Baltimore City plans expenditures of $570,000 for improvement and expansion.

ABERDEEN — Corps of Engineers, Baltimore, received low bid from Charles R. Scrivener Co., Inc., 240 S. Hilton St., Baltimore at $162,955 for transonic building (modification); Proving Ground.

ABERDEEN—Corps of Engineers, plans advertising for bids about April 1, for expansion of transonic range facilities, Aberdeen Proving Grounds; $500,000.

ANNAPOLIS — Navy Department let contract to Blake Construction Co. & William T. Lyons Co., 110 W. 25th St., Baltimore, at $2,272,000 for extension, mess hall and galley, etc., U. S. Naval Academy.

BALTIMORE — City Council Ways and Means Committee approved bill to allocate $1,500,000 in loan funds for City Hospitals, and $1,000,000 for Eastern Health District Building; also approved release of $357,500 for first phase work at hospitals.

BALTIMORE — Board of Education will soon select architects for preparing plans on various schools.

BALTIMORE — City Council Ways and Means Committee approved bill to allocate $1,500,000 in loan funds for Courthouse, and $100,000 for remodeling a building for Welfare Department Headquarters.

BALTIMORE — Corps of Engineers let contract to Blumenthal-Kahn Electric Co., Inc., 43 S. Liberty St., for electrical work involved in rehabilitation of buildings 1, 253 and 267, Fort Holabird for which Kirby & McGuire, Inc., 2518 Greenmount Ave., has general contract; George H. Schuman Co., Inc., 516 Glenwood Ave., has contract for plumbing, heating and other mechanical trades work in building 1 and to Poole & Kent Co., 2322 N. Charles St., in buildings Nos. 253 and 267.

BALTIMORE — State plans renovation of North Avenue property acquired as new site for Coppin State Teachers College, $150,000.

BALTIMORE—State Department of Health submitted request for $2,000,000 of new construction at Sydenham Hospital.

BALTIMORE — Baltimore Housing Authority received low bid of $3,174,000 from Henry A. Knott, Inc., 2107 N. Charles St., for Claremont Project MD 2-14.

BALTIMORE — General Services Administration, Public Buildings Service, Washington, D. C., received low bid from Kahn Engineering Co., 427 O St., S. W., Washington, D. C., at $106,003 for alterations to 3rd & 4th floors, Butler Bldg.

BALTIMORE — Morgan State College submitted a request for new construction, additions and improvements, $3,259,000.

BALTIMORE — Property Sales Co., Court Square Bldg., construct 209 dwellings, at $1,-213,000, 1300-1463 Cedarcroft Rd., 1300-1365 Gittings Ave.

BALTIMORE — Atlantic Coast Freight Lines, Inc., 1204 Nanticoke St., let contract

(Continued on page 28)

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WILSON MACHINERY & SUPPLY CO.
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LOUISIANA INDUSTRIAL EQUIP. CO.
Baton Rouge, La.
ROSS MACHINE COMPANY
Cave City, Ky.—MAINTAINERS & GRADERS ONLY
ARMSTRONG EQUIPMENT CO., INC.
Birmingham, Ala.
GOOD ROADS SUPPLY CO., INC.
Atlanta, Ga.
BROOME EQUIPMENT CO.
Augusta, Georgia
DEMPSTER BROTHERS, INC.
Machinery Division
Nashville, Knoxville, Tenn.
SOUTH CAROLINA EQUIPMENT CO.
Columbia, S. C.
CONSTRUCTION EQUIPMENT COMPANY
Mobile, Alabama

Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

MARYLAND

(Continued from page 26)

to Charles J. Spielman Co., Inc., 2801 Maisel St., for two buildings, $110,000.

BALTIMORE — Parks Engineering Co., Inc., let contract to Kirby & McGuire, 2518 Greenmount Ave., for food processing plant, $125,000.

BALTIMORE COUNTY — County Commissioners, Towson, received low bids for storm drains, Dundalk Village, Contract No. 254-D, Leo Butler Co., Box 97, College Park, Part I at $153,503; Part II, $72,680.

BREATHEDSVILLE — Department of Public Improvements, Baltimore, received low bid from W. Harley Miller, Martinsburg, W. Va., at $136,770 for cannery building, Reformatory for Males.

CROWNSVILLE — Department of Public Improvements, 506 Park Ave., Baltimore, let contract to Mullan Contracting Corp., 3945 Greenmount Ave., Baltimore at $1,589,540 for admissions building, Crownsville State Hospital.

CROWNSVILLE — Department of Public Improvements, 506 Park Ave., Baltimore, received low bid from Lacchi Construction Co., 2023 Maryland Ave., Baltimore at $398,700 for new boiler plant and foundation, Crownsville State Hospital.

CUMBERLAND — Allegany County Board of Commissioners sold $1,000,000 flood-control project bonds to Phelps, Fenn & Co., New York, N. Y.

EASTPORT — Housing Authority of Annapolis received low bid of $682,500 from Henry A. Knott, Inc., Baltimore, for housing project.

LAUREL — District Commissioners, Washington, D. C., received low bid of $477,106 from Kahn Engineering Co., 427 O St., Washington, D. C., for new heating plant at District Training School.

SALISBURY — Wicomico County Board of Education let contract at $1,557,710 to J. Roland Dashiells & Sons, for junior-senior high school.

SALISBURY — Peninsula Broadcasting Co. filed application with Federal Communications Commission for television station, $300,-000.

SPARROWS POINT, BR. BALTIMORE—Bethlehem Steel Co., Eugene G. Grace, Chmn. of Board, New York, N. Y., announced plans for an additional $40,000,000 to $45,000,000 expansion program at Sparrows Point mills.

SYKESVILLE — Department of Public Improvements, 506 Park Ave., Baltimore, let contract to Beer Brothers, Inc., 105 E. 25th St., Baltimore, at $171,663, for extension of steam lines, Springfield State Hospital.

TOWSON — State Department of Public Welfare submitted request for $2,681,400 for Maryland Training Schools for Boys.

MISSISSIPPI

ABERDEEN—City sold $60,000 bond issue to build a dairy plant.

BILOXI — Housing Authority let contract to Stanley W. Newman Company, Inc., P. O. Box 1565, Mobile, at $391,000 for low rent housing project.

BILOXI — U. S. Engineer Office, Mobile, Ala., let contract to Hyde Construction Co., P. O. Box 385, Jackson at $999,939 for taxiway, roads, parking areas, walks and storm drainage, water distribution, gas distribution and sanitary sewer systems.

DUNCAN & DEESON—Board of Trustees of Bolivar County School Board, A. H. Ramsey, County Supt., Cleveland, let contract at $51,177 to Frazier Construction Co., Greenville, for additional classrooms at Shaw & Rosedale Colored Schools.

GULFPORT — Meisner & Craig, 1238 E. Railroad St., Gulfport, have general contract at $42,850 for addition to present building of Daily-Gulfport-Biloxi Herald.

INDIANOLA — South Sunflower County Special School District let contract at $206,-821 to J. E. Staub & Co., Fulton, for Gentry High School for negroes.

JACKSON — James T. Canizaro, Archt., Deposit Guaranty Bank Bldg., has plans and specifications for $280,000 dining hall at Jackson College.

McCOMB—City approved issuance of $150,-000 bond issue for a metals working plant.

NATCHEZ — City Council let contract at $102,975 to Chicago Bridge & Iron Co., Birmingham, Ala., for 500,000 gallon elevated steel water storage tank, Contract No. 3.

NATCHEZ—Board of Trustees of Natchez Separate School District received low bid of $534,038 to J. E. Pyle, P. O. Box 1679, Little Rock, Ark., for new combination high school and grade school for negroes and L. B. Priester & Son, P. O. Box 4456, Jackson, and P. O. Box 869, Meridian, for new Montebello White Elementary School at $522,750.

NATCHEZ—Mayor and Board of Aldermen sold $1,250,000 bond issue to First National Bank of Memphis & Associates, for construction of new negro and white schools.

WEST POINT—Memorial Hospital Foundation received low bid from Building Service Co., West Point at $544,480 on A and at $94,440 on B, for 50-bed hospital—including doctors offices.

MISSOURI

JOPLIN—Vickers, Inc., Detroit, Mich., let contract to Jones Brothers Co., 1109 Byers, Joplin, for plant; manufacture precision oil hydraulic pumps for military aircraft; $3,-000,000.

KANSAS CITY—U. S. Engineer Office, received low bid from Ashworth & Sons Co., 3601 Alabama, St. Louis Park, Minn., at $103,-555 for railroad spur, Grandview Air Base.

MARYVILLE—City approved $450,000 bond issue for sewer system improvement.

ROLLA—School District of Rolla received low bid of $435,982 from Koch-Schroeder Construction Co., St. Joseph, for high school.

ST. LOUIS—Duenke Const. Co., 7810 Morganford Rd., will construct 12 dwellings, $130,000.

ST. LOUIS—Board of Education, 911 Locust St., let contract at $332,654 to Robert Paulus Construction Co., 3441 Morganford, for Nottingham School.

ST. LOUIS — Ammann & Whitney, New York, selected as Engrs. for new concrete hangar, Lambert-St. Louis Airport for operational maintenance of Trans World Airline's, Inc. four-engine planes, $1,200,000.

ST. LOUIS—Ridgewood Corp., Railway Exchange Bldg., plans office and warehouse, for Brightman Distributing Co., $250,000.

ST. LOUIS—Corps of Engineers received low bids for Part 1, at $193,750, from Missouri Dredging Co., 1508 Continental Bldg., St. Louis, and Part 2, at $26,260 from Kramer Constn. Co., Lemay, Mo., for levees Grand Tower Drainage and Levee District.

ST. LOUIS — McDonnell Aircraft Corp., Robertson, acquired 28.7 additional acres of land at Municipal Airport, for engineering laboratory, $500,000.

ST. LOUIS—City plans improvement of municipal dock, foot of North Market St., including platforms, access ramps and bridges, steel warehouse other items, $100,000.

ST. LOUIS — City, Division of Parks & Recreation, Palmer B. Baumes, Commr., plans 12 comfort stations, $120,000.

SEDALIA — Central Missouri Electric Cooperative has REA loan of $180,000 for 62 miles of distribution line.

SIKESTON—Scott-New Madrid Mississippi Cooperative Association has $800,000 REA loan for 256 miles of distribution line.

NORTH CAROLINA

ALBEMARLE—City received low bids for sewage improvements: Section 3, outfall lines, Blythe Brothers Co., Charlotte, $192,-886; Section 4, sludge digester, Lee Construction Co., Charlotte, $108,680; Section 5, electric, Electric Contracting & Engineering Co.

ASHE COUNTY—Board of Education let contracts for four schools: Blue Ridge School, Cline Lumber Co., Hickory, $145,250; Jefferson School, Mullis & Brown, W. Jefferson, $36,772; Lansing School, Little Construction Co., Charlotte, $67,225; Riverview School, Cline Lumber Co., $64,900.

BOONE—Appalachian State Teachers College let contract at $192,068 to Pennell & Haigler Construction Co., Lenoir, for faculty apartment.

BURLINGTON—Corps of Engineers, Wilmington, received low bid from J. A. Jones Construction Co., Charlotte, at $380,489 for superstructure framing, Test Building.

CAMP LEJUENE—Navy Department let contract to Grant E. Key, Lynchburg, Va., at $198,763 for removal of old and replacement of equipment, Post Exchange, Marine Barracks.

CATAWBA COUNTY—Board of Education, Newton, let contract at $242,000 to Cline Lumber Co., Hickory, for Foard High School.

CATAWBA COUNTY — Board of Education let contract at $246,896 to Guy Frye & Sons, Inc., Hickory, for St. Stephens High School.

CHARLOTTE—City received low bid of $2,-522,880 from V. B. Higgins Co., Greensboro, for additions Sugar Creek Sewage Treatment Plant.

CHARLOTTE—Board of School Commissioners let contract at $213,237 to A. H. Guion & Co., Wilkinson Blvd., for Ashley Park School.

CHARLOTTE—Board of School Commissioners let contract at $223,440 to Barger Construction Co., Mooresville, for York Road School.

COLUMBUS COUNTY — Board of Education, Whiteville, let contract at $108,412 to Charles C. Haynes, Jr., Durham, for Old Dock-Guideway High School.

DAVIDSON COUNTY—Board of Education received low bid of $440,000 from G. L. Wilson Building Co., Statesville, for new high school.

FARMVILLE — Pitt & Greene Electric Membership Corporation has $857,000 REA loan for 75 miles of distribution line.

FAYETTEVILLE—Housing Authority let contract to Crystal Lumber Co., Winston-Salem, N. C., at $1,214,000 for housing project.

GREENVILLE — East Carolina Teachers College let contract at $562,222 to R. K. Stewart & Son, High School, for library.

JOHNSTON COUNTY—Board of Education let contract at $204,400 to Wilson-Ledford Construction Co., Gastonia, for alterations and additions to school.

KERNERSVILLE—Board of Education approved $200,000 bond issue for raw water reservoir, pumping station and water lines.

LANDIS — Town let contracts for waterworks improvements, filter plant, Wagoner & Propst, Salisbury & Concord, at $133,400; pipe units, J. C. Bledsoe, Columbia, S. C., at $25,645.

MECKLENBURG COUNTY — Cornelius Electric Membership Corp. let contract to Cameo Construction Co., Sanford, at $199,566 for REA lines.

MECKLENBURG COUNTY — County let contract at $581,475 to Laxton Construction Co., 127 Brevard Court, Charlotte, for five negro school additions.

MINT HILL — Board of Education of Mecklenburg County, let contract at $170,800 to Atlantic Building Co., Charlotte, for new elementary classroom building and alterations to auditorium building, Bain School.

RALEIGH — J. Y. Phelps, 2701-2721 Essex Circle, will construct 20 apartments, $160,000.

SALISBURY — Housing Authority received low bid of $634,000 from Norman A. Smyth Co., Charlotte, N. C., for low rent housing project.

SPRAY — Union Carbide & Carbon Corp. plans $30,000,000 dynel staple fibre plant; capacity of 20 million pounds of dynel staple fibre.

SWANNANOA—Oerlikon Tool and Arms Corp. of America received apparent low bid of $335,485 from Z. B. Robinson and Sons, Asheville, for 17 prefabricated building units.

WAYNE COUNTY—Eastern Carolina Regional Housing Authority let contract to T. A. Loving & Co., Goldsboro, N. C., at $539,-890 for housing project, Goldsboro, NC 10-11.

OKLAHOMA

U. S. Corps of Engineers received low bid of $172,992 from W. E. Logan & Sons, P. O. Box 207, Muskogee, Okla., for relocation of Cherokee & Sequoyah County Roads, Tenkiller Ferry Reservoir.

ANADARKO — Board of Education plans grade school, $160,000.

McALSTER—Navy Department, New Orleans, La., let contract to Cullum & Whittle, P. O. Box 5062, Dallas, Tex., at $3,200,000 for 60 earth covered ammunition storage magazines complete with roads, railroads, water lines, fire hydrants, fire alarm circuits, Naval Ammunition Depot.

McALSTER—Navy Department, New Orleans, La., let contract to Tankersley Construction Co., First National Bank Bldg., Oklahoma City, at $3,498,713 for 60 earth covered ammunition storage magazines complete with roads, railroads, water lines, etc., Naval Ammunition Depot.

OKLAHOMA CITY — Corps of Engineers, Tulsa, let contract to Walter Nashert Co., Oklahoma City, at $2,200,500 for jet engine test facilities, Tinker Air Base.

OKLAHOMA City—City received low bid of $32,336 from Boecking Construction Co., 2810 N. McArthur Blvd., for water mains; low bid of $29,096 from World Water Systems for mains.

TULSA—Douglas Air Craft Co. let contract to E. B. Bush Construction Co., $973,576, for electronic test laboratory.

TULSA—Metal Goods Corp., St. Louis, Mo., acquired a five-acre tract along St. Louis-San Francisco Railroad, for warehouse and general office, $250,000.

SOUTH CAROLINA

BATH—Aiken County School District No. 4 let contract at $572,650 to Spong Construction Co., Columbia, for Langley-Bath-Clearwater High School.

BEECH ISLAND—South Carolina Generating Co., Columbia let contract to Standard Construction Co., at $1,271,650 for steam electric generating station.

CHARLESTON—Board of Trustees of District 4, let contract at $210,500 to Canady Construction Co., for Liberty Hill School.

CHARLESTON—Navy Department let contract to Tidewater Construction Co., Charleston, S. C., at $194,000 for additional mooring facilities.

COLUMBIA—Board of School Commissioners received low bid of $294,000 from T. E. Moore, Taylor Bldg., for expansion of Saxon Elementary School.

FAIRFOREST—Spartanburg Cunty School District No. 6 let contract at $305,000 to Cecil's, Inc., Spartanburg, for consolidated School.

FORT JACKSON — Corps of Engineers, Charleston, received low bid from W. A. Foster Construction Co., Burlington, N. C., at $58,495 for shops and service facilities.

GAFFNEY — Board of Public Works let contracts for following: wash water pump and emerg. pump, Allis-Chalmers Co., $11,-612; raw water pumps, Worthington Pump and Mach. Corp., $7,596; valves and hydrants, Grinnell Co., Charlotte, N. C., $11,974; cast iron pipe and fittings, American Cast Iron Pipe Co., $145,649 and wrought iron pipe, Noland Co.

GAFFNEY — Board of Public Works received low bids for water works improvements from C. Y. Thomason Co., Greenwood, Division 1 at $225,249 & Division 11, $94,549.

GEORGETOWN—Corps of Engineers received low bid of $181,251 from Norfolk Dredging Co., Norfolk, Va., for maintenance dredging.

LAURENS—Piedmont Telephone Cooperative, Inc., let contract at $302,089 to Irby Construction Co., Jackson, Miss., for 325 miles rural telephone lines.

ORANGEBURG—Board of Education let contract at $265,300 to V. Lyn Brabham, Florence, for colored high school; recreation center and addition junior high school.

PELZER-WILLIAMSTON—School Board, District 20, Anderson County, let contract at $593,350 to Daniel Construction Co., Greenville, for new high school.

WAGENER — Board of Trustees, Aiken County School District 60 let contract at $163,834 to W. H. Sellers & Son Construction Co., Columbia, for elementary school.

TENNESSEE

CHARLESTON—Bowater Southern Paper Corp. has DPA approval for construction of paper mill, $51,500,000.

CHATTANOOGA—Blue Cross-Blue Shield organization plans remodeling building, $50,-000.

CHATTANOOGA — City Commission conditionally approved a recommendation for expansion of administration building, Lovell Field, $319,412.

CHATTANOOGA—Erlanger Hospital plans ready, Chronic Disease Wing, $700,000.

CHATTANOOGA—T. U. Parks Co., submitted low bid of $94,989 for warehouse for ET & WNC freight line.

CLAY COUNTY — Dale Hollow Power Plant let contract to Fegles Construction Co., at $689,179 for plant.

CLEVELAND—Board of Education let contract at $46,738 to W. A. Miller, for addition to Trevena School.

COOKEVILLE—Town received low bid of $515,875 from C. F. Rule, Nashville, for sewer disposal plant.

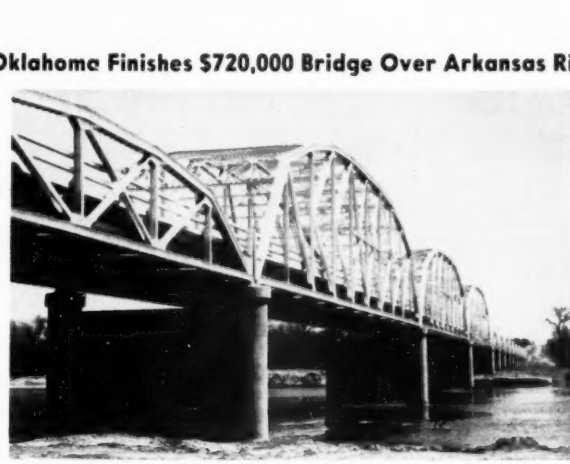
LENOIR CITY — Board of Education let contract at $259,500 to Blanche W. Taylor, Athens, for alterations and additions to Lenoir City High School.

MANCHESTER — General Hospital Commission selected Bianculli, Palm & Purnell, Chattanooga, Architects for new hospital, $1,000,000.

MEMPHIS—Board of Education let contract at $160,984 to Whitsitt Construction Co., for school at Perkins Tutwiler.

MEMPHIS—Corps of Engineers let contract to Cook Construction Co., Jackson, Miss., at $323,000 for approx. 725,000 cu. yd. embankment and appurtenant works.

Oklahoma Finishes $720,000 Bridge Over Arkansas River



Above—New $720,000 bridge over the Arkansas River on U. S. 60 connects Osage and Kay counties in Oklahoma. The span is one of the key points on Ponca City's $1,113,000 urban project along U. S. routes 60 and 77 that will be completed this year.

NASHVILLE—Housing Authority received low bid of $4,795,000 from J. A. Jones Construction Co., Atlanta, Ga., for housing project.

NASHVILLE—Corps of Engineers let contract to Dravo Corp., Neville Island, Pittsburgh, Pa., at $3,086,414 for Cheatham Dam.

OAK RIDGE—Atomic Energy Commission let contract to Mellwin Construction Co., Denver, Colo., at $386,236 for cafeteria and garage, fire barm and service buildings.

TYNER — U. S. Engineers, Nashville, received low bid from I. W. Harvard, Canton, Miss., at $113,726 for repairs to buildings, Volunteer Ordnance Works.

TEXAS

AMARILLO — City approved $2,250,000 bond issue for water improvements.

AMARILLO — City approved $1,500,000 bond issue for sewer system improvements.

AUSTIN—Austin Independent School District let contract at $1,074,415 to J. M. Odom, P. O. Box 774, for A. N. McCallum High School; B. E. Howell & Son, 1328 S. Congress Ave., on plumbing at $75,57?; Air Conditioning & Refrigeration Co., 1013 W. 34th St., on heating and ventilation at $133,310; Paul Wright Electric Co., Inc., 1315 S. Congress Ave., on electrical work at $97,699.

AUSTIN—Austin Independent School District let contract at $669,000 to Crockett Construction Co., 112 Academy Dr., for West Austin Junior High School between 10th & 12th Sts.

AUSTIN—City has acquired site between Laguna Gloria and Mount Bonnell for water plant, $1,750,000; project will include lake intake and high service pump station, approximately 20,000,000 gallons per day.

BEAUMONT — Beaumont Independent School District plans French High School, $650,000.

BEAUMONT—Housing Authority received low bid of $1,495,789 from Farnsworth & Chambers Co., Inc., Houston for housing project, Tex. 23-2.

BRAZOS—Brazos River Transmission Electric Cooperative has REA loan of $1,250,000 for 45 miles of 69 kv transmission line.

CORSICANA—City plans waterworks system and improvement; $1,250,000 bond issue voted.

DALHART — Xit Rural Telephone Cooperative has REA loan of $543,000 to improve and extend telephone service in rural areas of Dallam and Hartley Counties.

DALLAS — Veterans Administration Construction Service, Washington, D. C., received low bid from J. W. Bateson Co., Inc., Irwin-Keasler Bldg., Dallas, at $7,779,000 for Veterans Administration Hospital; Otis Elevator Co., Washington, D. C., at $334,558 for elevators; York Corp., Washington, D. C., at $91,269 for refrigeration; Laboratory Furniture Co., Mineola, N. Y., at $66,839 for laboratory equipment.

DALLAS—Texas Pipeline Company, Houston let contract to Smith Contracting Corporation, Fort Worth, at $7,878,600 for 16 inch line, about 175 miles long, carrying crude oil from Corsicana to East Houston, linking with 20-inch line to Port Arthur.

DALLAS—University of Texas has plans in progress for medical school on Harry Hines Blvd., for Southwestern Medical School, $2,750,000.

DALLAS—Dallas Independent School District let contract at $638,862 to Hal C. Dyer, Lone Star Gas Bldg., for addition to Hillcrest High School, Aberdeen & Hillcrest Ave.

DALLAS — Baker Hotel has application filed with NPA for addition, $747,000.

DALLAS—C. Regan Properties, Inc., has application filed with NPA for new office building, $2,600,000.

DALLAS — Neiman-Marcus, Inc., has application approved by NPA for department store, $3,250,000.

DALLAS—First Baptist Church Congregation has application filed with NPA for church building, $1,125,135.

EL PASO—Corps of Engineers, Albuquerque, N. M., received apparent low bid of $9,960,000 from Robert E. McKee General Contractor, Inc., El Paso, for permanent troop spaces and supporting facilities, Fort Bliss.

FORT WORTH—Commerce Company has NPA approval for office building, $2,250,000.

FORT WORTH — Consolidated-Vultee Aircraft Corp. has plans in progress for plant improvements, $2,000,000.

FORT WORTH—Corps of Engineers, Fort Worth, received apparent low bid from T. C. Bateson Construction Co., 618 Irwin-Keasler Bldg., Dallas at $2,128,965 for two permanent warehouses, Fort Worth Quartermaster Depot.

HARLINGEN—Corps of Engineers, Galveston, received low bid from Charles H. Tompkins Co., 907 16th, N. W. Washington, D. C. and James McHugh Construction Co., 6449 S. South Park, Chicago, Ill., joint venturers, at $4,077,377 for rehabilitation and new construction work, Harlingen Air Base.

HERTY—Southland Paper Mills, Inc., has DPA approval for construction of paper mill, $15,040,000.

HOUSTON — St. Mary's Seminary plans utilitarian-designed buildings, $2,000,000.

HOUSTON — Southern University for Negroes plans men's dormitory and women's dormitory, $1,500,000.

LONGVIEW — Gregg County Water District No. 1 has plans to be released for bids about April 15 for sewer system treatment plant and water mains, $500,000.

McALLEN—City to have plans complete and advertise for bids about April 1, for addition to Municipal Hospital and remodeling existing building; $500,000 bond issue voted; expect to obtain federal aid of $500,-000.

MIDLAND—Midland County has preliminary plans complete for wing to north side of present Courthouse; also remodeling present building and installing air conditioning, $800,000.

MINERAL WELLS — Corps of Engineers, Fort Worth, received low bid from Oldt and Small, Dallas at $1,799,943 for 10 airmen's barracks, Wolters Air Base.

NEAR AMHERST — Southwestern Public Service Co., let contract to Missouri Valley Construction, Inc., & Winston Bros., 1932

(Continued on page 30)

Southern Construction Projects

(Typical and Important Projects Excerpted from Daily Construction Bulletin)

TEXAS

(Continued from page 29)

Harrison, Amarillo, at $2,300,000 for generating units.

PORT NECHES—Port Neches Independent School District, C. L. Yarborough, Supt., let contract at $1,068,400 to O'Rourke Construction Co., P. O. Box 7557, Houston, for high school.

ROCKDALE — Aluminum Company of America plans office and laboratory building, $500,000.

SAN ANTONIO — Housing Authority received low bid of $1,107,777 from Southwest Bali Construction Co., 228 E. Martin St., for housing project, Tex. 6-3.

SHERMAN — Corps of Engineers, Tulsa, Okla., let contract to R. B. Stovall Construction Co., Dallas, at $795,784 for new N-S runway and taxiways, Perrin Air Base.

TEXARKANA—Corps of Engineers, Tulsa, Okla., let contract to T. C. Bateson Construction Co., Irwin-Keasler Bldg., Dallas, at $2,828,910 for two general purpose warehouses and necessary facilities, Red River Arsenal.

VICTORIA — Housing Authority let contract to Kelly S. DeBusk, Jr., at $780,000 for housing projects, Nos. Tex. 85-1 and 85-2, 102 units and 82 units, respectively.

WICHITA FALLS — Corps of Engineers, Tulsa, Okla., received low bid from Amis Construction Co., Oklahoma City, Okla., at $707,321 for runways and taxiways, Sheppard Air Base.

VIRGINIA

Defense Materials Procurement Agency may establish a receiving station to buy manganese; cost between $350,000 and $700,000.

ALEXANDRIA—First Baptist Church Congregation plans church building, $600,000.

ARLINGTON — Board of Education let contract at $549,153 to A. C. Minnix & Sons, Washington, D. C., for Claremont Elementary School.

ARLINGTON — St. Georges Episcopal Church plans addition, $200,000.

ARLINGTON—General Services Administration, Washington, D. C., received low bid from F. S. Bowen Electric Co., Bladensburg, Md., at $122,380 for additional transformers, etc., Columbia Pike, Federal Office Building No. 2.

BLACKSTONE—Board of Education received low bid of $102,989 from Kenbridge Supply Co., Kenbridge, for addition to Blackstone High School.

BRISTOL — Housing Authority received low bid of $1,283,000 from James E. Green, Johnson City, Tenn. for low rent housing project.

BUGGS ISLAND—Corps of Engineers let contract to Ballenger Paving Co., Greenville, S. C., at $250,852, for relocating N. C. secondary highway, Anderson Swamp, Mill and Nuthush Creeks.

CHARLOTTE COUNTY—Board of Education let contract at $57,100 to C. E. Nuckols, Richmond, for addition to Charlotte Training School.

DAHLGREN—Navy Department, Washington, D. C., received low bid from American Construction Co., Washington, D. C., at $676,400 for personnel structures, civilian male and female dormitories.

FAIRFAX COUNTY — Fairfax County Board of Education, Fairfax, received low bid of $376,300 from Sharpe & Hamaker, Arlington, for Herndon High School.

FORT BELVOIR — Corps of Engineers, Washington, D. C., received low bid of $56,475 from Voss Engineering Co., Washington, D. C., for classroom building, Pontoon Area.

FORT EUSTIS—Corps of Engineers, Norfolk, let contract to J. A. Jones Construction Co., 209 W. Fourth St., Charlotte, N. C., at $4,532,800 for 225-man barracks and central heating plant.

FORT LEE—Corps of Engineers received low bid from Irons & Reynolds, 1724 H St., N.W., Washington, D. C., at $937,230 for 450 man (EM) barracks.

LANGLEY FIELD — National Advisory Committee on Aeronautics let contract to Virginia Engineering Co., 80 29th St., Newport News at $652,000 for general excavation, piling and concrete foundations, Unitary Plan 4x4-foot supersonic tunnel, office and laboratory, L-500, Langley Air Base.

MONTGOMERY COUNTY—Board of Education received low bid of $365,565 from Trinkle & Perkins, Dublin, for Vicker Elementary School; Price's Fork Elementary School.

NEWPORT NEWS—Newport News Shipbuilding & Dry Dock Co. let contract to Doyle & Russell, Central National Bank Bldg., Richmond, at $1,385,960 for engineering building addition.

NEWPORT NEWS — Housing Authority let contract to Virginia Engineering Co., Newport News, Va., at $2,218,000 for low rent public housing project, No. Va. 3-4.

NORFOLK—Melchoir's, Inc. plans Pepsi-Cola bottling plant at Alexander Park, $200,000.

QUANTICO — Navy Department, Public Works Office, let contract to Koolair Co., Washington, D. C., at $28,925 for insulation of roof and installation of roof ventilators Bldg., 1001 Marine Corps Station; from John L. Reid & Co., Alexandria, at $28,989 for service center addition; from Algar, Inc. at $39,786 for building rehabilitation.

RICHMOND—B. G. Cone received low bid of $40,264 from F. Scott Rice for alterations and addition to dwellings.

RICHMOND—Board of Education received low bid of $327,884 from Howard-Mitchell Construction Co. for additions and alterations to Randolph School.

SUFFOLK—Board of Education received low bid of $824,000 from Endebrock-White Co., Hilton Village, for Suffolk Negro High School.

WEST VIRGINIA

CHARLESTON—City plans $12,000,000 for sewage disposal system, including construction of ultra-modern disposal plant that would prevent further pollution of both Kanawha and Elk Rivers, estimated cost $10,000,000 and $2,000,000 for additions to present city-wide distribution system.

NEW HAVEN—Home Telephone Co., has REA loan of $108,000 for system calling for combining the proposed Hartford Central office with the attended dial central office at New Haven, and installation of an unattended dial central office at Letart.

CLARKSBURG — Harrison Rural Electrification Association has $60,000 REA loan for financing farmstead installation of various electrical appliances and equipment W. Va. 10U Harrison.

Yell—Job 8326, Plainview-Rover road, D. F. Jones Construction Co., Little Rock, $163,505;

Boone-Marion—Job 9271, Lead Hill and Lowry relocation, W. J. Menefee Construction Co., Sedalia, Mo., $663,440;

Carroll—Job 9293, F.A.P. S-194(2), Osage Creek relocation, E. E. Barber Construction Co., Fort Smith, $112,742;

Washington — Job 9303, Cincinnati-North and South road, Ellis & Koonce, Fort Smith, $125,511;

Clark-Pike—Job 1261, Amity-Glenwood road, Four Brothers, Inc., Sweet Home, $63,630;

Poinsett — Job C-56-4, F.A.P. S-841(2) and S-843(2), Tyronza-north and west, D. F. Jones Construction Co., Little Rock, $6,713;

Pending right-of-way matters, two jobs have not yet been awarded. They are Job 10409, Manila south to Highway 40, Bucton Construction Co., Inc., Hazen, Ark., and Job 11415, Marion-Turrell road, D. B. Hill, Little Rock, Ark.

Awards Totaling $2,602,553 Made by Arkansas

Sixteen highway projects are covered under contracts totaling $2,602,553, awarded by the Arkansas State Highway Department. Listed by counties, they are:

St. Francis—Job 11417, F.A.P. S-28(1) and S-106(1), Madison-Widener and Hughes-West roads, D. F. Jones Construction Co., Little Rock, Ark., $247,030;

Jefferson—Job 2423, Wabbaseka Bayou bridge, Pioneer Construction Co., Inc., Malvern, Ark., $42,358;

White—Job 5360, F-260(9), Beebe bypass, R. W. Hammock, Van Buren, Ark., $32,247;

Grant-Saline—Job 6422, F.A.P. F-39(2) and F-126(2), Sheridan-North road, William D. Jeffrey Construction Co., Inc., Fort Smith, $563,640;

Dallas—Job 7410, F.A.P. F-277(8), Fordyce-North road, Ben M. Hogan & Co., Little Rock, $350,072;

Conway-Van Buren—Job 8314, F.A.P. S-84(1), Center Ridge-North road, Mode & McCracken, Conway, $198,515;

Yell—Job 8321, Briggsville-West road, D. F. Jones Construction Company, of Little Rock, Arkansas, $84,292;

Southern Bell Sets Record During 1951

The Southern Bell Telephone Co. plans to continue its recordbreaking expansion program that added up to $154,758,000 worth of new facilities installed during 1951.

The company, which serves 1,014 cities and towns in Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee, has in prospect a $167,000,000 program for the present year, depending upon the availability of materials and the raising of new capital.

The $167,000,000 total includes land and buildings, $8,500,000; central office equipment, $37,250,000; station equipment, $51,000,000; exchange lines, $53,600,000; toll lines, $12,370,000; and general equipment, $4,000,000, and other, $280,000.

Since January 1, 1946, Southern Bell has gained 1,867,968 telephones in the nine states to meet demands by both civilian and military users. This record expansion has more than doubled the number of telephones in use since the beginning of 1946.

There are now approximately 3,731,172 telephones served by Southern Bell, compared to 1,863,204 at the end of World War II, an increase of more than 100 per cent. Additional expenditures for new facilities by Southern Bell since January 1, 1946 now exceed $779,000,000.

Although Southern Bell nearly doubled long distance circuits in the postwar years, calls home from service men in the 31 training camps, service hospitals and other military and naval establishments are keeping them humming.

A total of about 4,500,000 people has applied for telephone service in Southern Bell's portion of Dixie since the war. At the end of 1951 there were about 203,000 applications yet unfilled. Over 95 per cent of the applications have been cared for.

In six years, Southern Bell increased the number of telephones in rural areas from 171,000 at the beginning of 1946 to more than 500,000 as 1951 closed.

COST ACCOUNTING FIGURES SAY

Buy a "QUICK-WAY" for your business!

Reg. U. S. Pat. Off.

MORE WORK PER DAY

LESS COST BETWEEN JOBS

BUILT TO LAST LONGER

8 DIFFERENT MONEY-MAKING ATTACHMENTS

STANDARD PARTS INTERCHANGEABLE

When there's a *QUICK-WAY* on the job, construction work tickets and cost accounting figures point to BIG PROFITS on every hour of operation.

The reasons . . . *QUICK-WAY* is simply built and precision engineered. It's many machines in one — with 8 money-making attachments.

All parts are simple and easy to get at . . . this holds servicing time and expense at the minimum. More working parts are interchangeable for easier, cheaper maintenance.

A *QUICK-WAY* mounts on any standard truck of proper size to go anywhere a truck can go at truck speed. *QUICK-WAYS* are built low for stability on the job and on the road — clear low underpasses — can be shipped airborne.

Day-in, day-out performance of over 7,000 *QUICK-WAYS*, in all parts of the world, suggests it will pay you to use *QUICK-WAYS* in *your* business.

There are 4 QUICK-WAY MODELS to meet the needs of any operation, large or small.

"QUICK-WAY"
TRUCK SHOVEL CO.
DENVER, COLORADO, U. S. A.

"QUICK-WAY" TRUCK SHOVEL DISTRIBUTORS:

FLORIDA-GEORGIA TRACTOR CO.
Jacksonville, Tallahassee, Orlando, Lakeland, Tampa and Miami, Florida; Savannah, Georgia

RISH EQUIPMENT CO.
Bluefield, Charleston, Cincinnati, Clarksburg, Richmond, Roanoke

SOUTHERN EQUIPMENT SALES CO.
Columbia, South Carolina

POWER EQUIPMENT COMPANY
Knoxville, Chattanooga and Kingsport, Tenn.

HAMPTON RDS. TRACTOR & EQUIP. CO.
Norfolk, Virginia

NORTH CAROLINA EQUIPMENT CO.
Raleigh, Charlotte, Asheville, Wilmington, Guilford and Greenville, North Carolina

RAY BROOKS MACHINERY CO.
Montgomery and Mobile, Alabama

RAY BROOKS TRUCK & TRACTOR CO.
Pensacola, Florida

FREE STATE EQUIPMENT CO., INC.
Baltimore, Md.

TRACTOR & EQUIPMENT CO., INC.
Birmingham, Alabama

Above—Perspective of the John E. Mathews bridge, a 7,375-foot 6-inch link in the Jacksonville Expressway and one of two St. Johns river crossings. The cantilever span over the Main channel is to be 810 feet between centers of bearings and is flanked by two anchor spans each 406 feet, 6 inches long. Concrete shafts of the two main piers will rise to an elevation of plus 142.87 feet, which will provide the superstructure with a 149-foot, 6-inch navigational clearance above high water. The bridge deck will consist of two 24-foot roadways separated by a 4-foot mall.

John E. Mathews Bridge After One Year

by

Stanley L. Johnson

Resident Engineer

Parsons, Brinckerhoff, Hall & MacDonald

Reynolds, Smith and Hills

Associated Engineers and Architects

Construction work on the John E. Mathews Bridge, over the St. Johns River, at Jacksonville, Fla., was actually started in May 1950 when a preliminary contract was awarded by the State Road Department of Florida for the construction of eight of the tallest concrete piers of the West Approach. These piers were completed in February, 1951.

The balance of the substructure and the entire superstructure were awarded as two separate contracts during December, 1950. The main substructure contract was specified to be completed within 515 calendar days after the date of execution of contract which was December 27, 1950. The construction period, therefore, is from December 28, 1950 through May 25, 1952; the superstructure contract was specified to be completed within 24 months from the date of award of contract which was December 7, 1950.

Jacksonville Expressway Link

The John E. Mathews Bridge (originally known as the Arlington Bridge because it connects Jacksonville with Arlington), is a link in the Jacksonville Expressway and is one of two St. Johns River crossings now under construction. The other crossing, known as the Gilmore Street Bridge, connects the Riverside section of Jacksonville with South Jacksonville and is located about four miles upstream from the Mathews Bridge. The expressway also includes other major structures such as the Myrtle Avenue Viaduct and the Trout River Bridge. At this writing (January 1952), the Myrtle Avenue viaduct is in its final design stages.

The John E. Mathews bridge is a high level structure 7,375 feet 6 inches long between abutments. For a distance of about 1000 feet from the east abutment the roadway is level and carried on precast concrete pile bents. From this point, and also from the west abutment the roadway rises at a 4.75 per cent grade to the anchor piers of the main cantilever span. The cantilever span over the Main (Terminal) Channel is 810 feet between centers of bearings and is flanked by two anchor spans each 406 feet 6 inches long. Concrete shafts of the two main piers will rise to an elevation of plus 142.87 feet which will provide the superstructure with a 149 foot 6 inch navigational clearance above high water. The bridge deck will consist of two 24 foot roadways separated by a 4 foot mall.

Seven Main River Piers

West of the channel are two main river piers (1W and 2W), twenty-three land approach piers (3W through 25W) and the west abutment. East of the channel are five main river piers (1E through 5E), fourteen river approach piers (6E through 19E), twenty precast concrete pile bents, and the east abutment.

Field work by the engineers started in July 1950, with the supervision of borings. At that time a total of thirty borings were made for use in determining the foundation design of the piers. It was then that indications of very complex and unique foundation conditions were confirmed.

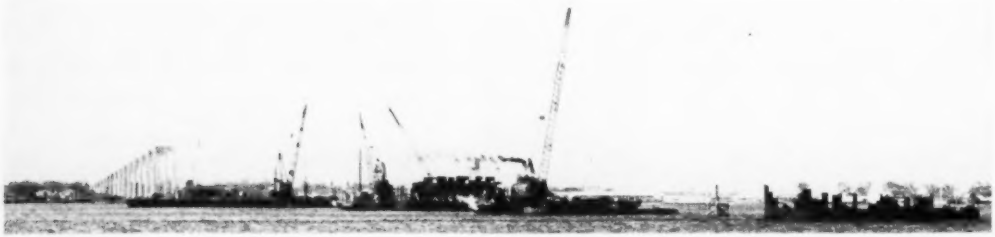
Although construction officially started December 28, 1950, it was not until late in February, 1951, that the substructure contractor started preliminary work in establishing a base of operations north of the bridge site. The first precast concrete pile was poured March 23, 1951. This delay in the start of actual operations was advantageously used by the engineers in laying out and preparing the triangulation and control system. It is seldom that field work for final triangulation can be accomplished without disturbance of construction operations, and under ideal climatic conditions which prevailed during the winter months.

Pile Driving Problem

The most interesting feature and greatest problem encountered in the construction of the substructure is the driving of the pile foundations. Steel bearing piles 12 by 53 pounds, and 14 by 73 pounds, are used throughout except for Pier 1W which is designed for spread footing support. As in general in this locality, the principal subsurface bearing material is a calcareous sandy clay substance commonly referred to as "marl" or sometimes "blue marl." This material extends to great depth. On top of this "marl" and under the usual sand and silt overburden a rock crust is usually found.

In the bridge construction area the crust varies from practically nothing to a series of layers totalling about 8 feet thick. It seems to consist of overlapping lenses of varying thickness, hardness and stratification. The original borings were helpful, but one or two borings at each pier did not always disclose all of the variations in strata that occur within a footing area. Each and every footing has presented a different problem in pile driving.

The ideal steel pile foundation in this



locality is one where piles are friction bearing in "marl" with a specified minimum penetration of 20 feet below bottom of excavation. In many instances spudding through rock was necessary to attain a satisfactory penetration. Some of the piles are end bearing on rock while others either drove or were driven in holes pre-spudded through rock to become friction bearing in "marl." Early experiments at attempting to drive piles through heavy rock resulted in some instances in considerable damage to the tips of piles. These piles had to be extracted, holes spudded in rock and new piles driven. There were also instances where rock is so dense that attempts at spudding were unsuccessful.

Main Pier Cofferdams

Another feature of the bridge is the large cofferdams for the seven main river piers, two on the west side of Main Channel and five on the east side. Tremie seals for these cofferdams vary in volume from 596 cubic yards to 4,320 cubic yards of concrete. On September 29 the first of these seals was poured at Pier 5E. The Contractor's floating concrete plant batched 913 cubic yards of concrete from 9:30 A.M. to 5:50 P.M. or an average of 110 cubic yards per hour for the entire pour. To date, four of these large seals have been poured: Piers 5E, 2W, 2E and 1E in that order.

Because of their size, the two main piers, 1E and 1W, are worthy of special note. They are identical in cofferdam plan dimensions and in design of concrete above the water line. Cofferdams of each are 54 feet 6 inches wide by 107 feet long. There is, however, a vast difference in the subsurface conditions which affected the foundation design.

McKiernan-Terry Hammers Used

At Pier 1E, borings indicated silt and river mud to elevation minus 90 where there was a very thin and soft rock crust over the "marl." This pier was designed to be founded on 450-14 inches by 73 pounds steel bearing piles. Pile driving was accomplished in 19 working days using a McKiernan-Terry S-8 single-acting hammer and a McKiernan-Terry 11-B-2 double-acting hammer. Piles attained satisfactory bearing at tip elevation minus 110 to minus 115. Excavation in the soft silt was carried to minus 58 where a 2-foot sand and gravel blanket was spread to minimize the possibility of a "mud wave" rolling ahead of the concrete as the seal pour advanced. The seal extends in depth from minus 56 to minus 36 and was poured in two 10 foot high passes. This 20 foot thick seal consisting of 4096 cubic yards by actual batch count is the largest single pour on the project. It was made in a continuous pour from 7:15 A.M. January 7, 1951 to 10:55 P.M. January 8, an elapsed time of 39.7 hours—an average of 103.2 cubic yards per hour.

Pier 1W is located in an area containing thick rock strata from elevation minus 25 to minus 35. Here it is necessary to remove the rock within the cofferdam since excavation must be carried to elevation minus 45 because of the depth of the adjacent ship channel. The results of a soil bearing test (yet to be performed) will determine whether or not the foundation for this main pier will be constructed according to its present spread footing design. The cofferdam has been driven and sheet piling well seated in the rock by pre-spudding a perimeter trench. Overburden has been excavated and rock is now being broken up for excavation, by placing of small charges of dynamite in pre-spudded holes.

Long Piles Required Splices

At Pier 2-E, subsurface conditions are similar to that at 1E except that piles were driven to tip elevations of minus 125 to minus 130 before attaining satisfactory bearing. It was necessary to weld 30 foot splices to each of the 208-65 foot piles which were ordered for the location. Splicing was also necessary at Pier 19E where similar conditions existed.

At Pier 5E it was necessary to pre-spud holes for 90 per cent of the piles and at Pier 2W for half of the piles.

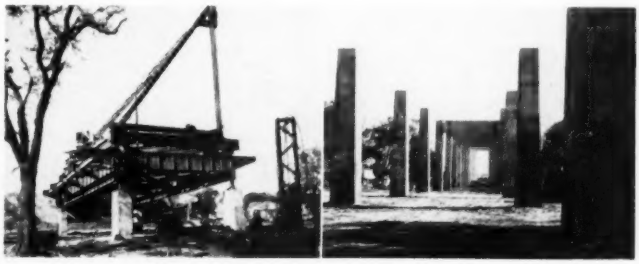
As previously mentioned, the easternmost 1000 feet of the structure consists of steel beam spans on precast concrete pile bents. These bents are the normal type in general use in Florida. Some difficulty was experienced in pile driving because many of the precast concrete and composite piles after penetrating soft materials struck rock before attaining final bearing, thereby complicating the problem of maintaining proper alignment of each individual pile. In one bent the tips of the piles tried to "walk" on a layer of rock during driving. Nevertheless, they were tightly stay-lathed together to provide as good an alignment as was possible prior to pouring of the pile caps. The so-called composite pile consisted of a precast concrete pile with an 8 inch steel H-pile embedded in and projecting beyond the tip of the concrete pile.

Form Stripping Record

On the west side of the Terminal channel, approach piers 3W through 10W were completed last February under a seperate contract. All work west of 2W is on land and has not presented the problems which have been encountered on the river piers. The contractor made remarkable progress on the west approach from Pier 11W through 25W and the west abutment. Pile driving for this section of the job did not start until July 24, 1951. Final pour was made November 15, 1951—a total elapsed time for actual construction of 115 calendar days. The pier shafts of 18W through 25W are designed as simple shafts with no connecting top strut. In one instance, the contractor made a form stripping and setting-up operation with what is probably record speed. After the shafts of Pier 19W were poured, the contractor elected to extend his crane boom to 90 feet and lifted the entire forms off the top of the shaft, set them down while the carpenters cut off bottoms to fit 20W, and erected them on 20W in place. This transfer of total form units from 19W to 20W was made in 10 working hours from start of stripping to start of new pour.

Construction of the east approach,

(Continued on page 50)



Georgia Site Selected for Rayonier Mill

Rayonier, Inc., has announced early construction of a new pulp mill at Doctortown, Ga., capable of producing 250 tons per day of purified wood cellulose. A mill site of 530 acres has been purchased. Construction will be started as soon as steel and other materials requiring Government allocation are available.

Clyde B. Morgan, Rayonier president, said that application has been made to the National Production Authority for a Necessity Certificate and for allocation of the necessary materials. The new mill will provide additional tonnage to meet the growing requirements of Rayonier's customers and at the same time will afford a reserve capacity for the possible manufacturer of wood cellulose for military purposes.

Proceeds from the recently announced borrowing of $40,000,000 from the Prudential Insurance Co. will be used in part to finance this project, which will constitute an investment in excess of $25,000,000.

Rayonier is one of the large producers in the United States of purified wood cellulose, a basic raw material used in the manufacture of rayon, tire cord, cellophane, photographic film, and other cellulose derivatives. The company already owns and operates three mills in the State of Washington and one mill in Florida, with combined annual capacity of approximately 430,000 tons. This fifth mill will have annual capacity of 87,000 tons.

A considerable enlargement of Rayonier's capacity is going forward at the present time in a $6,000,000 special construction program at the four existing mills. This construction is expected to be completed in 1952. The Doctortown project is a further extension of the company's long-range expansion program, which has been planned to serve the steadily increasing demand for wood cellulose in the rayon, cellophane, and related industries in the United States and world markets.

An advantageous location for the mill was selected in southeastern Georgia, on the Altamaha River, at a point 38 miles from the sea. There is an abundant supply of both surface water and ground water in the area. The site in Doctortown, near Jesup, is served by the main line of the Atlantic Coast Line Railroad, with radiating rail connections and highway approaches affording economical transportation of pulpwood from the heavily wooded surrounding area.

The mill will use an improved process which permits the production of superior grades of wood cellulose, primarily for high tenacity yarn applications, such as tire cord, parachute materials, and rubber belting. Flexibility is provided in the mill's design, however, so that it will also be able to produce nitration pulp if necessary for the manufacture of explosives, as well as pulps for special types of paper and for standard textile yarns.

To provide an assured long-term supply of raw material for this new operation, Rayonier has recently enlarged its already substantial wood resources in the South, which had been built up to support production at the Fernandina Division in Florida. Large acreages have been purchased this year. The company now owns or controls approximately 400,000 acres in southeastern counties of Georgia and northeastern counties of Florida.

Approximately 550 cords of wood will be consumed per day. Part will be drawn from Rayonier's own holdings of timber, and part will be purchased from local land owners, thereby creating a sizable new market for wood in the area. The mill is designed to use all the local species of pine, as well as the local hardwoods.

Approximately 450 people will be employed to work in the mill itself, and another 400 or 500 people will work in the cutting and transportation of pulpwood.

The Doctortown project will be carried out under the executive direction of R. F. Erickson, vice president in charge of engineering and plant development. The mill's special processing methods were developed by Rayonier's research division under supervision of Dr. A. N. Parrett, vice president in charge of research and development. Designs for the installation of the processing equipment have been prepared by Rayonier's own engineers. Ebasco Services, Inc. has been retained as consulting engineer to design the mill structurally.

Consolidated Engineering Starts $7,000,000 Davison Plant

Construction was begun in February on the plant for the Davison Chemical Corp., ten miles south of Lake Charles, La. on the Calcasieu River. To cost more than $7,000,000, the plant will produce catalyst on a large scale for the petroleum-cracking refineries of the Gulf Coast area, and other chemicals needed by the industries of the section. It will employ about 200 when it goes into production, for which a target date of early next year has been set.

A "task force" from Davison and from the Consolidated Engineering Co., of Baltimore general contractors, has been busy preparing for actual construction, which will be done with local labor and so far as practical with materials produced in the neighborhood, according to the company's announcement.

Grading and site preparation have been done by the R. E. Heidt Construction Co., of Lake Charles. The area prepared for the plant is 18 acres in extent and this will be fenced when clearing and grading have been completed.

The plant will need large quantities of water for its operation and the contract for well-drilling has been let to the Layne Louisiana Co., also of Lake Charles. One test well has been completed. The two permanent wells will each be rated at a minimum capacity of 1200 gallons per minute.

Ground-breaking was for the plant's main process building. Supervising the work were W. E. Maclean, project engineer for Davison; J. I. Crout, project manager, and Clifford Huff, field superintendent, both of Consolidated Engineering. Mr. Huff will stay with the job until its completion.

Material shortages may delay the work, the announcement said, but there is optimism that the construction schedule can be maintained because of the high priorities given to projects essential to defense material production.

Contract Let for $6,426,000 New Orleans Elevator

Contracts for the construction of a $5,426,000 addition to the public grain elevator of the Port of New Orleans were awarded to the Fegles Construction Co. of Minneapolis, Minn., and Blount Brothers Construction Co. of Montgomery, Ala. The Board of Port Commissioners made the announcement through President Leon Irwin, Jr.

"The contract with Fegles Construction Co., Inc. is for $5,635,000, subject to reductions due to alternates, if they are accepted. It is the largest single contract the Board has ever made with a private firm for the construction of a new port facility," Mr. Irwin said. The grain elevator project is part of an over-all port expansion program that will top $15,000,000 when completed.

The two bids were judged by the Board to be the most satisfactory of the nine bids received, Irwin explained. The bids were opened January 18 at the port commission building at No. 2 Canal Street.

The contract with Blount Bros. Construction Co. is for $791,000. It calls for construction of foundations for the grain storage structure, head house, car dumpers, and appurtenant structures.

The contract with Fegles Construction Co., Inc. includes all work other than that called for in the first contract.

Construction of the grain elevator addition will be begun as soon as materials are available, Irwin said.

"The need for greater unloading and loading capacity for bulk grain in New Orleans has been evident for several years," Mr. Irwin declared in announcing the contract. "For years we were getting only a small part of the mid-continent grain business due to a lack of efficient, rapid unloading mechanisms."

"In addition, we could not compete with other Gulf grain ports — Houston and Galveston—because of lack of grain storage space. The present capacity of 2,622,000 bushels will be nearly doubled by the new addition, and new handling machinery will also be installed to take care of the heavy flow of grain from inland states. New Orleans will be in a position to compete with rival ports in one field we haven't captured the lead in until now—grain export."

"The elevator is presently operating at full capacity," he added. "We handled 70 million bushels of grain in the past fiscal year—an all-time record, but not nearly as much business as we could get if we were able to handle it."

(Continued on page 45)

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Current Problems of State Highway Departments

by
A. E. Johnson
Chief Engineer,
Arkansas State Highway Department

Most State Highway Departments started out by having troubles and those troubles have multiplied and plagued the departments ever since and most of them can be classified as current problems. From the humble beginning of the motor vehicle at the turn of the century, when only 8,000 vehicles were registered, the highway program has lagged behind the need and the demand. Most of you can remember the road promotion days of the first three decades of the Twentieth Century when the theme was "Let's get out of the mud." A vast system of highways was constructed during that period and many of these roads are still in service. Some states borrowed funds to build their highways, others operated on a "pay as you go basis."

The first attempts at creating a highway system were the special improvement districts and as the need for a better system became apparent the Highway Departments were created and federal aid to the states was started to help finance the needed improvements, to obtain uniformity, and to develop connected and integrated systems. The manner in which federal aid has been administered by the Bureau of Public Roads over the years has had a healthy and stabilizing influence upon many of the State Highway Departments.

Road System Detailed

The public roads system in the United States, which is considered the world's best, now consists of the following: 2,661,149 miles of road and streets not on the federal aid systems, of which 95 per cent are under the control of local units of government and 5 per cent under the control of State Highway Departments; 416,989 miles of federal aid secondary roads, of which approximately one-half are under the control of state highway departments and one-half under the control of local units of government; 234,837 miles of highways on the Federal Aid primary system, under the control of the state highway departments, and the nation's interstate system of highways totaling 37,800 miles under the control of the state highway departments, which totals slightly more than one per cent of the total public road mileage yet the system carries 20 per cent of the nation's motor traffic.

$45,000,000,000 Investment

This vast system of public roads represents a capital investment in the neighborhood of $45,000,000,000 and in 1949 the needed improvements at that time, and not at some future date, were estimated to be between $41,000,000,000 and $47,000,000,000, with $23,000,000,000 needed on the state highway systems, both rural and urban extensions. The states and the Bureau of Public Roads are presently revising this estimate and it definitely will not be decreased below the 1949 figure.

In 1950 the State Highway Departments had at their disposal approximately $2,712,000,000 in state funds for construction and maintenance purposes and this was supplemented by one-half billion dollars in Federal Aid funds for construction. Total expenditures for construction and maintenance on the entire public roads system was slightly over $4,000,000,000 per year. After deducting such amounts as are needed for maintenance and considering the average life expectancy of highway improvements, it all adds up to the fact that we are not replacing our depreciation and obsolescence losses and we are losing ground as far as financing and replacing highways is concerned.

Motor Vehicle a Necessity

The motor vehicle has evolved from being a luxury to one of absolute necessity and it has caused us to completely overhaul and re-plan our way of living. This is evidenced by the way that our cities have expanded over wide areas and by the fact that 6,000,000 school children are transported over one million miles of rural roads per day to attend consolidated school. Other similar facts could be pointed out.

The rural resident or the "country cousin" now drives a modern vehicle, sells his raw product to the market and consumes processed foods. He and his children have modern conveniences in their homes, they buy their clothes from the same places that the "city cousins" buy theirs. There is little difference in the standard of living of the rural resident as compared to the city resident and he is demanding better, more convenient, dustless surfaced roads over which he will drive his family automobile or bring his produce to market.

Since only 10 per cent of the local rural roads carry over 100 cars per day and on the average this traffic will not even pay for the maintenance of the road, under the present system of financing road and highway improvements, mainly through user income, improvement and operation of the farm-to-market or the land service type of road has to be highly subsidized. This is one of the main problems confronting the average highway official. It seems all too evident that if this class of road is to be brought up to desirable standards and it is determined that it is not equitable for the highway user to support this sort of subsidy, then some other form of revenue should take over the balance of the financing problem.

One-Tenth of Motor Dollar for Roads

The average motorist drives his car a little less than 10,000 miles per year and although he is of the opinion, and makes himself very clear on the issue, that he is taxed to the hilt for roads. In reality he only spends about one-tenth of his motor transportation dollar for a road over which his car is to operate. In general, the motorist will spend more for providing insurance and liability coverage on his car than he puts into the highways and streets.

There is much evidence that some persons think that if they go to the expense of buying and operating a car that it should be up to someone else to supply him with a modern high type pavement for his use. The fact that highway user revenue is termed "tax" is, in my opinion, one of the main irritants to the general public and one of the main deterrents toward the adequate financing of highways. The word "tax" is extremely unpopular to the average person and that person never stops to analyze the highway finance problem as to what he is paying versus what he desires and requests. It has been demonstrated through the operation of modern toll roads that the motorist is willing to pay many more times the rate that he pays in motor user taxation, but in another form, for the privilege of traveling over a modern luxury type highway.

Highway officials know this financing problem backwards and forwards and periodically document it by making engineering appraisal of needs, engineering studies, sufficiency ratings and cost estimates of bringing the various systems to tolerable standards and or modern and desirable standards.

Personnel also a Problem

The next serious problem confronting the highway departments to be treated in this paper is personnel. A report in 1947 of the Highway Research Board Committee on Highway Organization and Administration stated that highway departments were in need of 4400 professional engineers and 5400 sub-professional engineers, which represents some 30 to 50 per cent of the number of personnel employed in those groups at that time.

In all too many instances the top staff positions in the highway departments are filled with men nearing the retirement age, veterans of the pre-highway department special improvement district days, and transfers from the railroad expansion era. The number of practicing highway engineers capable of designing and constructing highways and bridges is entirely too small and the work load per man is entirely too high to give the public the most efficient job for its tax dollar. Upgrading of personnel not thoroughly qualified to do the job has been and is being practiced through necessity, because inducements in the highway field are not adequate to attract enough qualified and trained engineers.

Salaries in highway departments are low, the average being much less than comparable salaries in Federal service or in major private industry. A report of the Highway Research Board Committee on highway department personnel practices shows an average increase in salaries from 1947 to 1950 of 25 per cent for the average highway employee, and that the increase in the number of chief administrative officials receiving $10,000 or more

per year increased from 7 to 11 during that period, and that the chief engineers making $10,000 or more per year increased from 3 to 9. However, the average of the top 12 positions in highway departments increased only some 15 to 20 per cent and the highway employees are not the highest paid employees in state service, rating in seventh or eighth place.

In 1940 the average highway employee received $1,146 annually as against the $1,826 for the average Federal employee. In 1950 the comparison was $2,484 as against $3,371. In fact, the average highway employee received only 2.2 per cent more in salary than the average department store clerk. In considering the increase from 1940 to 1950, the purchasing power, in accordance with the Bureau of Labor Statistics consumer price index, shows that the $1,300 annual increase really amounted to $321 in purchasing power, of which greatly increased income tax payments eliminated practically all.

There seems to be a gradual decrease in the number of graduate engineers that the colleges and universities are turning out and if draft policies continue as now in effect the number of available graduates will still further be decreased. The American Road Builders Association's committee on advancement of highway engineering reports the following after an interview of a sample of the 1948 civil engineering graduates: 85 per cent consider highway department work as interesting, 72 per cent consider it satisfactory from the standpoint of being diversified work, 55 per cent consider that it compares unfavorably with other sources of employment and 82 per cent consider advancement in highway work as unfavorable. These interviews also indicated that many of the graduates would be interested in going to work for highway departments if no other type of employment was available.

Studies Cite Low Salaries

Various studies by the American Association of State Highway Officials and the American Society of Civil Engineers have found that many graduate engineers object to working for highway departments because of the low starting salaries and poor advancement possibilities, which they can document by pointing to the salaries of highway department staff personnel that have been employed for 20 to 30 years. They also object to the insecure tenure of service that might be caused by political considerations and also to the possibility of political interference with engineering planning that would be distasteful to the engineer who is educated in facts and rational economics.

In fact, more than one graduate engineer being interviewed has expressed the opinion that the public does not hold the same respect, dignity, nor esteem for an engineer working for a State Highway Department as compared to one working for Federal service or private industry.

In order to neutralize these objections the highway departments have made some effort to improve conditions and offer inducements. Nineteen highway departments now have merit systems and 34 have retirement plans; however, these retirement plans are not as broad and as desirable as those offered by Federal service and major industry, and the plans are at the mercy of the whims of the State Legislative bodies which sometimes are unstable.

Salary raises for state employees are sometimes difficult to obtain and in most cases they have to be approved by the legislative bodies on an appropriation basis and these bodies are usually economy minded and are all too often of the opinion that anyone can perform highway engineering functions after a brief exposure to the work.

Many of the states have gone into recruiting and training programs for young engineers with varying degrees of success, but none is classified as entirely satisfactory. All too often the graduate

A. E. Johnson

engineer will cast his lot with a highway department to fill out some phase of his education or experience that he thinks is lacking, then departs for greener pastures.

At the recent meeting of the Southeastern Association of State Highway Officials at Charleston, South Carolina, December 6-7, 1951, a resolution was passed calling for improved working conditions, increased salaries and other inducements to entice engineers to make a career in highway departments.

Congestion, Overloading Acute

Another very serious and current problem confronting the highway departments arises from congestion and overloading and it is becoming more acute by the hour. Although the automobile has only been with us a little over a half a century there is estimated to have been 52,200,000 motor vehicles in the United States in 1951. Ninety-five per cent of all private automobiles perform some necessary function besides purely recreation; 71 per cent of our American families depend on the automobile to some degree in making a living. Between 1940 and 1950 automobiles increased 45 per cent and trucks increased 80 per cent in registration, with a big increase in the large combination truck-tractor using the tandem axle, while the ton miles of motor freight hauled on the main rural routes during the same period of time increased 252 per cent. It has been estimated that 75 per cent of all commodities are now moved by truck.

Too many of our roads in present service were built during the big construction program 20 to 30 years ago when most bridges were designed for 30,000 pound trucks and the pavements designed for a maximum 18,000 pound axle load. Prior to 1930 it was seldom that a truck exceeded 30,000 pounds in gross weight, and seldom that an axle exceeded 18,000 pounds.

With the heavy investment that this nation has in its system of highways it is mandatory that every effort be made to preserve and keep these roads in service as long as possible, yet operate them to allow the maximum in service for both passengers and freight, and overloading is already taking a heavy toll. The national economy would not permit the rebuilding of a vast highway system at this time to meet the demands being made upon it by larger and heavier vehicles, even if manpower, technical know-how, equipment, and materials were available. It is absolutely necessary that the states take a more aggressive attitude to the enforcement of load regulations.

At the time that a big share of the pavements now in existence were built there were only about half as many vehicles traveling over them as now, and less than one-third as many trucks, which were on the average much smaller than the ones now used. This increase in motor vehicle registration and extremely large increase in truck traffic all lends to creating congestion, particularly since for two lane roads on level terrain one truck takes up as much highway capacity as 2½ automobiles, on rolling terrain as much as 5 automobiles, and in mountainous terrain one truck can take the equivalent in highway capacity of some 10 to 15 automobiles where truck climbing lanes are not provided.

Highways, Streets Overcrowded

Most of the city streets and especially those which serve the downtown business sections of most towns and cities were laid out prior to the invention of the automobile and the urban congestion problem is one of the most serious confronting the highway official. The queing up of long lines of vehicles on our heavily traveled rural areas, and the bumper to bumper, stalled traffic in our cities at peak load times, are undisputable evidence that our highways and streets are vastly overcrowded with resulting hazards and economic losses.

Much has been said of the Maryland Road Test. This test was well worth its cost and effort as an eye-opener alone, and it indicates the need for additional road tests where the sections would be especially designed and constructed for the purpose to eliminate such possibilities as uneven compaction of sub-grades, non-uniform soils and moisture contents.

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Current Problems of State Highway Departments

(Continued from page 37)

all which can lead to controversy when final results are considered. Load tests are needed to confirm or disaprove the presently used design and construction methods and to determine the effect of various axle loadings upon construction and maintenance costs in order that an equitable distribution of supporting costs would be assessed to the various classes of highway users.

Steel a Pressing Problem

The most pressing current problem of the moment is that of steel for necessary highway construction. In America's economy our production might has developed hand in hand along with the unprecedented growth of motor transportation. Highways literally feed this nation; we are a nation on wheels, and in reality highways are sections or integral parts of our industrial production lines. In order to preserve and improve our national economy so that we can support the big defense spending that is currently taking place, our motor transportation system must be kept at its maximum efficiency.

With the vast mileage of highways in use and the fact that roads do wear out, road construction and operation must be a continuing thing without holidays and interruptions. Roads that are to be built or reconstructed should be built to care for the traffic demands made upon them and this necessitates the broader use of steel than in previous years, since projects to alleviate major congestion involves grade separations and heavier and wider highways.

At the time this nation entered into World War II a holiday on highway construction was ordered and in general the same system of roads is with us now, except it is a decade older, practically half a life expectancy older. All too little highway construction has been done since the end of World War II and a recent issue of Business Week states that there is not enough space on all the highways built since the war to park all of the cars that have been built since the war. Now we are facing another serious threat to highway construction through a shortage of steel. Roads are too important to receive this sort of forced neglect and they are as important at this time, in the minds of highway officials, as almost any type of defense preparedness.

Hostility to Adequate Program

Some of the "Wise Men of the East," who occupy high positions in the Defense Production Administration and the National Production Authority, are of the opinion that highway construction and replacement at this time is very nonessential. In fact, their expressions and attitudes border on plain hostility toward an adequate highway program. Many of the personnel of these agencies were in the old War Production Board of World War II when highway construction was deemed non-essential and they still share the same opinion. However, one has to but travel extensively over this nation's highways now to see how wrong that thinking was.

We realize that the type of men needed in regulatory agencies such as the DPA and NPA have to be men that are resolute and firm in their convictions if such programs are to work, but in this case it is the opinion of higway officials everywhere that these men are wrong in their positions.

In reading the report of the hearings held September 6 and 7, 1951, before the Sub-Committee of the Committee on Public Works of the United States Senate, regarding steel allocations for highways, their hostile attitude is set forth clearly. They question the requests of the highway departments for 1,907,000 tons of steel for 1952 as being in excess of their minimum requirements and state that it is the biggest estimate ever given for highway needs instead of being a bare minimum.

They criticize some of the states as classing large urban projects as critical and needed at this time. With the indication that we will live in a state of preparedness and constant threat of attack for an indefinite period, such projects should be expedited for the civil defense need alone. The airplane's role in warfare has shrunk distances to the point that in all likelihood this nation will not be spared serving as an active military theatre in the future. The fact that our big centers of population are coincident with our largest industrial areas and that five of the world's 25 largest cities are in the United States, creates a critical problem in itself. The stampeding and confusion of a mass exodus from a bombed center of population could cause as much human misery and moral breaking as the actual attack itself, if highway facilities are inadequate to accommodate evacuation.

Motor System a Big Advantage

In this period of conflicting ideologies of government, let's compare our transportation facilities with Russia. Russia has 2.7 times the land area and 13 per cent more population; yet there are 209 persons per automobile in Russia as compared to 4 persons per automobile in the United States and Russia has only one-fourth the public road mileage that we have in the United States. In fact, our motor transportation system is one of our biggest advantages over a potential enemy and this advantage should be preserved and kept at high efficiency.

The total national production of carbon steel is between 80,000,000 and 90,000,000 tons and highway departments have asked for a little less than 2 million tons in 1952. This, to the departments, does not seem to be an exorbitant request. It is understood that the defense expansion program and armed forces are requiring some 20 per cent of the national production. It is not the intention of highway officials to ask for any steel that is needed for those functions.

The manner in which steel allocations have been made to highway departments has prevented their full utilization. The May 1951 allocation was given in the amount of 151,000 tons as against a minimum requirement request of 208,500 tons. This allotment was received too late to be of any value. The June allocation was of the same amount as May, but half of this was refused by the mills. For the third quarter of 1951 the departments listed their needs as 591,494 tons and an allocation was given for 300,000 tons, 85,000 tons of this allocation was refused by the mills and an indeterminate amount was lost to the states by the revalidation process.

In the fourth quarter of 1951, when the NPA promised the departments that the controlled materials plan would be running at top efficiency, the highway departments requested 481,917 tons, or 2½ per cent of the national production for that quarter, 250,000 tons was allocated to the departments or 1.3 per cent of the national production. However, included in that allocation was 100,000 tons of structural shapes which amounted to 7 per cent of the national production. Total refusals for the fourth quarter have not been totaled; however, on the last day of November in 1951 they amounted to 67,000 tons through refusal by the mills. By revalidation processes, by receiving allocations too late to plan for its use, or by receiving allocations too late for the lead time requirement and finding the rolling mills' books closed, the highway departments have realized far too little from the controlled materials plan.

We are now advised that once a mill accepts an order revalidation is not necessary, this should prove beneficial and make the plan operate more efficiently.

A thorough knowledge of the steel condition on the part of the American Road Builders Association is evident from reading the excellent testimony of General Reybold when he appeared before the Senate Sub-Committee.

In the hearings, Commissioner Thomas H. MacDonald of the Bureau of Public Roads requested that highway construction be classified as industrial facilities whereby self-certification in the amount of 25 tons of steel would be available for any project. It would be a great help if this could be accomplished, as it would permit the construction of many projects needing only a small amount of steel.

Structural Shape Need Apparent

The need for structural shapes is very apparent; however, if reinforcing steel could be made available in increased quantities the highway departments could go ahead with much needed work which they are now hesistant to plan.

The highway departments in no way padded their estimates when furnishing information on minimum steel needs; however, insinuations have been made that this is the case. The American As-

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Construction of County Roads with Emulsified Asphalt

Above—Left—Johnestown-Coahoma Road, Coahoma County, Mississippi, after 12 years of service. It consists of four inches of emulsified asphalt stabilized base with three-eighth-inch single surface treatment. Right—New Africa Road in Coahoma County, Mississippi, after 11 years of service. It has six inches of emulsified asphalt stabilized base with single surface treatment, using three-inch aggregate.

by

Ben T. Collier

MAXIMUM utilization of local low cost materials is of primary importance as an approach to the economical construction of county roads. Use of such materials found on or near the job site, rather than processed aggregate imported over considerable rail or highway distances, can result in job cost reductions of major proportions. Indeed, the use of one or more readily accessible low cost aggregate deposits sometimes makes possible the immediate construction of a project which would otherwise face indefinite postponement because of limited funds.

Natural sand is probably one of the world's most abundant materials suitable for use without mechanical processing in asphaltic construction, and is found in some form in almost every part of the country. A creek bed, a hillside deposit, or river sand bar may contain large quantities of suitable and easily obtainable sand aggregate. Pit run gravels also present interesting possibilities, used alone or in combination with other materals. The projected roadway itself often rests on unlimited quantities of native soil readily adaptable to base stabilization with emulsified asphalt.

Top—Newly completed emulsified double surface treatment with uncrushed and crushed slag aggregates, Clarke County, Mississippi. Lower—Final on two and one-half-inch road mix of creek gravel and emulsified asphalt, Hinds County, Mississippi.

A ten-mile section of emulsified asphalt stabilized soil base built in Coahoma County, Mississippi, in 1938 might well serve as an example of the utlization of all three of the above types of aggregates. The existing roadway consisted of an average depth of two inches of pit run sand clay gravel on the native A-7 soil. A four-inch emulsified asphalt stabilized base was constructed after scarifying this existing road surface, and adding Mississippi River Bar sand in sufficient quantities to reduce the minus 200 mesh content to a maximum of 20 per cent. Laboratory investigation showed that it was more economical to keep the fines below this figure than to add the additional emulsified asphalt required to stabilize material having a higher percentage passing the 200 mesh screen. To keep minus 200 material below the 20 per cent maximum, and to insure uniformity, sieve analyses were run on samples taken at intervals from the windrow prior to mixing.

The resultant blend of materials was mixed by travel plant mixer with only 3.6 per cent emulsified asphalt stabilizer, or 2 per cent residual bitumen. This proportion also was established by labora-

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Equipment . . . Manufacturers News

Reversible Impact Wrench by Independent Pneumatic

A new Thor ⅜-inch portable pneumatic reversible impact wrench is announced by Independent Pneumatic Tool Co., of Aurora, Ill.

Now in production at the company's main Aurora works, the new wrench features the same basic impacting mechanism as the Thor "Silver Line" universal electric impact tools now in use in industry, automotive service and general maintenance.

Key feature of the power and long

New Thor Portable Pneumatic Reversible Impact Wrench.

service life records established by the new Thor impact, says the company, is an exclusive rolling ball type cam which increases efficiency and steady functioning of the impacting mechanism. The new wrench available with two types of spindles a size 24 with ½-inch square drive, and a size 24S with a 7/16-inch hexagon quick change chuck integral with the spindle.

Equipped with convenient side handle and trigger type throttle, the new wrench weighs only 5¾ pounds, and measures 8-11/16 inches in length. A reversing valve is conveniently located at the back of the tool. The tool can be equipped for either vertical or horizontal suspension on assembly lines, or for permanent locating of the wrench from overhead balancers.

The wrench is powered by a powerful air motor which transmits power to the impact mechanism through a torque increasing planetary gear system. All heat treated alloy steel gear elements, precision finished, are mounted in full antifriction bearings, providing extra power for heavy service and long life. Drawing loads and quick run-down of the nut are easily accomplished for types of screw fastenings.

Harnischfeger Reports Sales of $62,090,551

Sales of Harnischfeger Corp., Milwaukee, were $62,090,551 in 1951, compared with $42,234,961 in 1950, Walter Harnischfeger, president, reports.

Net earnings were $3,010,610, compared with $1,966,667 in 1950. Earnings were equal to $5 per share on preferred stock, and $10.29 per share on common stock. This compares with $6.63 per common share in 1950.

Mr. Harnischfeger estimated that state and federal income and excess profits taxes of $6,830,000 equaled 70 per cent of the corporation's gross profit.

The annual report revealed that the corporation's gross income dollar was divided as follows: 51 cents for materials, supplies and services; 29 cents for wages and payroll taxes for the benefit of employes; 6 cents for expansion and working capital; 12 cents for federal, state and local taxes; 1 cent for depreciation and amortization of equipment, buildings, etc.; and 1 cent for dividends paid to stockholders.

Capital expenditures for plant and facilities were $3,026,000. A major share went for modern machine tools to reduce production costs and improve product quality.

Two Escanaba, Mich., plants that produce truck cranes, power shovels and welders, and the Milwaukee welding electrode plant were enlarged.

The P. & H. Diesel division completed a new, modern plant in Crystal Lake, Ill., trebling previous production capacity.

The new Pacific Division, Los Angeles, started production of certain types of overhead cranes, in a new plant.

The P. & H. Prefabricated Home division enjoyed rapid growth in production and sales, in face of a sharp national decline in new home construction. Both the Homes division and the Builders Acceptance Company, which aids P. & H. Home builders with interim financing and mortgages, operated at satisfactory profits. Demand for soil stabilizers for the construction industry exceeded production. Substantial backlogs were built for materials handling, construction equipment and welders.

Bob Head Appointed Southwest Manager

Baldwin-Lima-Hamilton Corp., Lima-Hamilton Division, Lima, Ohio, manufacturers of Lima shovels, cranes and draglines, announces the appointment of R. W. "Bob" Head as district manager of the Southwest territory with headquarters at 1805 North Industrial Boulevard, Dallas, Texas. His territory includes New Mexico, Oklahoma and Texas. Mr. Head succeeds R. A. "Bob" Otterness who has accepted the position as sales manager for Contractors Equipment and Supply Co., Lima distributor in Albuquerque, New Mexico. Mr. Head has served in similar capacities with other construction equipment manufacturers. "Bob" has a wide acquaintance among Texas contractors from previous sales work in the excavating industry. He is a graduate of Iowa State College.

Helm Promoted to New Post

Edward J. Helm, technical engineer in the sales department, engineering and construction division of Koppers Co., Inc., for the past two years, has been promoted to manager of the patent and development section.

Joseph Becker, Vice President and General Manager of the Division who announced the appointment, said that Mr. Helm will be responsible for study and development of improvements in plant design and equipment, recommendation of new techniques and designs, and development of standards.

Bucyrus-Erie Booklet Shows Hydrocrane Versatility

"Busy As A Bee" is the apt title of a recent publication by Bucyrus-Erie Co. describing the all-hydraulic Hydrocrane. The two-color, 24-page booklet pictorially illustrates the machine's versatility by showing it doing everything from digging ditches to moving furniture through second story windows.

The more than 100 illustrations show the machine with its many attachments placing tanks and pipe; digging, trenching and back-filling; hoisting and erecting; loading, unloading and stockpiling; and cleaning catchbasins, removing snow and stumps and cleaning up in quarries, mines and public streets.

The truck-mounted machine is extremely mobile capable of highway speeds up to 50 mph. Its flexibility makes it the most useful rig imaginable. With a crane front-end, such attachments as magnet, ¾ yard clamshell, ½ yard trash bucket, orange peel catch basin bucket, 3-tine grapple, or forked grab can be put into service in a matter of minutes. The crane front-end is quickly convertible, in the field, to the dragshovel called Hydrohoe.

For a copy of this outstanding machine's complete story, write Bucyrus-Erie Co., South Milwaukee, Wisc., or visit your Hydrocrane distributor.

Allis-Chalmers Releases New Motor Bulletin

Construction details of Allis-Chalmers explosion-proof, fan-cooled and non-ventilated motors are described in a new bulletin released by the company.

These fan-cooled Type APZZ motors are available in ratings of 3 to 100 horsepower and the non-ventilated Type APKK in ratings from ½ to 2 horsepower. They meet all requirements of, and are approved by, Underwriters' Laboratories, Inc., for use in Class I, Group D, and Class II, Groups F and G atmospheres.

Due to the elimination of enclosed external air passages, the motors are easy to keep clean. This feature, together with an efficient cooling system, makes them suitable for use where there is dust, dirt, fly ash, rain, snow, or corrosive gases.

Copies of the bulletin, "Allis-Chalmers Explosion-Proof Motors," 51B7286A, are available upon request from Allis-Chalmers Manufacturing Co., 1083 S. 70th St., Milwaukee, Wisc.

Synthetic Rubber Used to Protect Air Fields

Airfield runways and taxi strips "softened" by jet fuel spillage can now be protected with a coating of new plasticized synthetic rubber and tar blend developed by the Naugatuck Chemical division of United States Rubber Co.

Test strips of the new material, called "Surfa-Aero-Sealz," were installed last February at Hunter Air Force Base, Savannah, Ga., under the supervision of the U. S. Government Corps of Engineers. Several other materials will also be tested on a 900-ft. section of runway and on a taxi strip.

Fuel spillage, from topped-off tanks,

generally occurs on the parking stands, taxi strips, and on the initial five hundred feet of the runway just before take-off. In many cases these pavements are constructed of asphaltic cement. They can now be economically protected with a coating of the new plasticized synthetic rubber and tar blend. The new material can also be used as a combination with asphaltic concrete in lengthening existing pavements, or in new construction.

The synthetic rubber and tar blend is unaffected by searing jet blasts, which range in temperatures from approximately 160° F. to 300° F., and higher. The blend also has the stability to withstand high wheel loads, and it gives a densely graded, relatively non-skid surface.

"Surfa-Aero-Sealz" is mixed with selected tar cement in the hot melt phase, producing a homogeneous mixture. It is shipped to construction sites in drums, tank cars or tank trucks, where it is mixed with aggregate by the regular hot mix plant procedure. It is laid with regular paving equipment, then rolled and compacted with tandem rollers. A coating of an inch to an inch and a half is applied to asphaltic cement pavements.

B-E Adds 10-Yard Scraper to Popular B-Type Line

Design and construction advantages which make Bucyrus-Erie's 22-yard B-250 and 16-yard B-170-A scrapers master earthmovers have been incorporated in the company's most recent addition to the B-type family, the B-113.

Designed to utilize fully the speed and power of the International TD-18A tractor, the B-113 features push bumper adjustable to eight positions, apron grills giving the operator an excellent view of the bowl during loading, "fountain" action for bigger, more uniform loads, fast hauling and clean dumping.

These and the many other advantages of the new B-113 are explained and illustrated in a two-color bulletin which can be had by writing Bucyrus-Erie Company, South Milwaukee, Wisc.

Huber Appoints Three New Distributors Abroad

Huber Manufacturing Co. of Marion, Ohio, announces appointment of three new distributors abroad—Roberto Colon Machinery Co. of San Juan, Puerto Rico; Vecdi Diker, of Ankara, Turkey; and Horacio Torrendell, S. A., Montevideo, Uruguay—to handle Huber's line of road maintenance equipment.

The Roberto Colon Machinery Company maintains offices at Commercio Street No. 400 in San Juan. Roberto Colon is president of the firm and Oscar Hau is sales manager. The company will distribute Huber Machines throughout Puerto Rico.

Main offices of Vecdi Diker are at Mitat Pasa Caddesi 54-B in Ankara. The firm will handle the sale of Huber road maintenance equipment in Turkey under the direction of Vecdi Diker, president.

Huber's new distributor in Uruguay, Horacio Torrendell, has main offices at Cuareim 2052-82 in Montevideo, as well as six branch offices in the interior of the country. Key personnel include: Horacio Torrendell, president; Alfredo Klemens, industrial engineer and manager of the industrial machinery department; and Rodriguez Molinari, industrial engineer in charge of road building and construction. The firm will represent Huber throughout Uruguay.

Booster Battery Units Provide "Starting" Service

The flow of cars from its parking lots and adjacent streets in cold weather is speeded up at the West Allis Works of the Allis-Chalmers Manufacturing Co. by six portable booster battery units recently provided for engine-starting service. Units are available during shift changes on any day when the temperature drops to 5 degrees above zero.

In recent years, the company has provided tow service during very cold weather. This method of engine starting was not always satisfactory because of the resultant damage to some cars. Automatic transmissions often made such towing hazardous and unsuccessful. The new engine-starting method reduces the amount of damage to vehicles and cuts down the waiting period for such assistance.

Booklet on G.M. Diesel

How the production of 50,000,000 diesel horsepower by a single manufacturer can be regarded as an owner's insurance policy to assure top engine performance is told in a booklet just published by the Detroit Diesel Engine Division of General Motors.

The booklet covers various design features of the GM 2-cycle Diesel engine, action photographs of installations in the construction, transportation, marine, mining, oil well drilling, agricultural and industrial fields and a map showing the Division's widespread sales and service facilities throughout the country.

The booklet is available from Detroit Diesel distributors and dealers or direct from Detroit Diesel Engine Division, 13400 W. Outer Drive, Detroit 28, Mich.

Named Factory Manager

William G. Thannert has been named factory manager of Trackson Company, Milwaukee, according to an announcement by Walter H. Stiemke, Trackson president.

Mr. Thannert was previously general planning superintendent at Caterpillar Tractor Co., Peoria, Ill. Trackson Company is now a wholly-owned subsidiary of Caterpillar.

In 1936 Mr. Thannert joined Caterpillar as a four-year apprentice machinist. He gained experience after graduation in the tool room, in tool design and as a gear technician. In February, 1942, he was named a shop foreman and a year later was promoted to the purchasing department with the task of establishing sub-contractors for the Peoria Plant's gear requirements.

While in purchasing, Mr. Thannert also did liaison work between the Peoria plant and Caterpillar Military Engine Co., Decatur, Ill., a wartime subsidiary of Caterpillar. After the war he held a special assignment in the manufacturing department and in June, 1946, was promoted to superintendent of layout and timestudy in the planning division.

Greef Assigned to New Allis-Chalmers Post

Edward B. Greef, an application and plant design engineer in Allis-Chalmers processing machinery department for the last two years, has been assigned to the company's San Francisco district office as a sales representative. Mr. Greef came to Allis-Chalmers in 1948 following graduation from the University of Idaho as a mechanical engineer.

A. C. Tractor Employed to Windrow Snow

Model D motor grader working close to curb, windrows snow.

Windrowing snow ahead of the loaders to widen its principal streets for movement of traffic, and for parking, is a job turned over to the Allis-Chalmers Model D motor grader by the City of West Allis, Wisconsin. This makes it possible for the loaders to do a fast, clean job of clearing snow. In many communities, investment in equipment is kept down by mounting a ¾-yard loader on the rear of the economical Model D, letting it do double duty windrowing and then going into reverse as a loader. It does a clean job around corners because the bucket can get close to the curbs, say company officials.

Worthington Names Bauer

B. A. Bauer has been appointed purchasing agent and supervisor of stores at the Oil City, Penn., plant of Worthington Pump and Machinery Corp. Mr. Bauer, a native of Oil City, was employed by the National Transit Pump and Machine Co. for thirty years previous to Worthington's acquisition of the plant.

Folder Issued on Model 80 Backfiller-Tamper-Crane

Cleveland Trencher Co. has just published a four page, two color 8½ x 11 bulletin on the Cleveland Model 80 backfiller, tamper, side crane.

Re-introduced to the construction and utility fields at the request of pre-war users, this versatile, one-man-operated

machine backfills as it tamps as it travels. The folder uses text as well as action photographs to good advantage in depicting and describing the varied operations performed by the 80. Complete specifications and dimension data are clearly presented.

Copies of the Cleveland Model 80 Bulletin (Form S120) may be obtained without obligation by writing to the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio.

Equipment . . .

New Type Engine Added By International

International Harvester truck equipped with factory-built liquefied-petroleum-gas powered engines.

The motor truck division of International Harvester Company has introduced, for the first time in motor truck history, factory-built liquefied-petroleum-gas-powered engines as Underwriters Laboratories listed equipment on trucks, W. K. Perkins, manager of motor truck sales, announced.

International's new LP-gas (propane-butane) engines are optional on all International truck models equipped with the company's heavy-duty Super Red Diamond engines. The new LP-gas-powered models include the LP-185, LP-195, and LP-205 Roadliners, and all other models in the L-185 through LF-210 series, Mr. Perkins said.

"These significant additions to the International motor truck line will meet the increasing demands of a large group of fleet operators for trucks equipped with factory-installed propane-butane fuel systems," he said.

"We feel that in making these Underwriter-listed power plants available to truck owners we are making an important contribution to the transportation field. There are a number of benefits in operating efficiency and costs to be derived from using the economical, high-octane fuel."

The potential production of LP-gas is large, Mr. Perkins pointed out, with costs in most states running several cents per gallon under that of gasoline. The fuel is available at approximately 4,000 bulk distributing plants in the United States.

Large fuel tanks, standard on International's LP-gas-powered units, permit trucks to run as far as 400 miles between refuelings.

"In equipping highway tractors for LP-gas operation, International took note of the large quantities of high-octane propane-butane available and recognized the potential savings in fuel costs over either diesel or gasoline, especially in locations enjoying low LP-gas cost per gallon," Mr. Perkins stated.

"Fleet operators will also find that the life of motor oil is considerably lengthened," he continued. "This is because the use of LP-gas eliminates the washdown of lubricating film and oil dilution. With these elements of deterioration eliminated, it is natural that a cleaner engine will result, and a resultant substantial reduction in maintenance costs should be experienced."

The high-octane qualities of LP-gas make use of higher compression ratios possible on the three LP-gas adapted Super Red Diamond engines, Perkins said. The three engines are the "372," the "406," and the "450."

"By incorporating especially engineered LPG carburetion, cold manifolding, and other refinements in our production designs," Perkins declared, "we can take advantage of the combustion qualities of LP-gas which forms no carbon sludge or gummy deposits." He pointed out that because of the dry gas characteristics of propane-butane fuel, the elimination of these foreign properties is effected in these LP-gas engines.

Perkins said International's west coast-built truck models have been offered for many years with LP-gas-fueled engines optional. The company's current expansion and new development in this field, a direct result of International's years of research and experiment with gaseous fuels for truck operation, will not affect production schedules for the same models powered by gasoline engines, he said.

The standard gasoline tanks have been replaced, on the LP-gas models, by heavy-steel, dual, 62-gallon liquid measure tanks and are also Underwriters listed. They are filled to approximately 90 per cent capacity, depending upon temperatures, allowing space above the liquid for expansion.

The tanks are refilled at service stations by pumping the fuel in liquid form through a hose fitting which is attached to the fill valve on the pressure tank. Safety features include vertical venting pipes extending above the cab to permit discharge of relieved gas into the atmosphere; seal caps and automatic excess flow shut-off valves on fuel tanks and in the lines; electric shut-off valve; and extreme high-pressure lines and fittings.

New Tractor Tool Catalog

A two-color catalog (No. 1191) featuring tractor tools for use with Caterpillar-built tractors and equipment has just been issued by the Hyster Co. of Portland, Ore., materials handling equipment manufacturer.

The six-page pictorial and verbal description includes the complete line of Hyster tractor tools and graphically shows practical applications of the equipment to multiply tractor uses and increase tractor production.

Included in the literature is the Hystaway excavator-crane; the tractor yarder, winches and donkeys; logging arches and Sulkys; and the Hyster grid roller for road construction and salvaging bituminous pavement.

Blaw-Knox Appoints New Superintendents

The chemical plants division of Blaw-Knox Co. has appointed three district superintendents of construction — John W. Hubbard, Herbert Morgan, Jr., and J. C. Tooke.

Mr. Hubbard will supervise the division's building activities for the oil and gas industries and for the process industries generally in the Southwest. He will make his headquarters at the Southwest Branch in Tulsa.

Mr. Morgan was a resident engineer on construction projects. Mr. Tooke has had 12 years' experience as a field engineer and construction superintendent. Before joining Blaw-Knox in 1948, he was with a New York construction company.

Universal Concrete Pipe Appoints Byron Bledsoe

Byron A. Bledsoe will become an engineering representative at the Atlanta Office of Universal Concrete Pipe Co., April 1, it is announced by President H. X. Eschenbrenner.

Mr. Bledsoe, a graduate of Tennessee University, and the Yale University Bureau of Highway Traffic, is an associate member A.S.C.E., a member of the Georgia Engineering Society, National Research Council Conference on Highway Safety and the Institute of Traffic Engineers.

Since 1949 he has served at Washington, D. C. as engineer of traffic and operations, Highway Research Board, National Academy of Sciences. Prior to that he supervised heavy construction projects as project manager for MacDougald Construction Co., Atlanta. During World War II he was major in the Corps of Engineers.

C. Ray Wilhelm is manager of the Universal Atlanta Plant, assisted by LeRoy Epperson and Mr. Bledsoe. The plant is situated at 1270 Milton Ave., S.E., and manufactures all sizes of concrete pipe.

Caterpillar Man Made N.P.A. Deputy

J. W. Mohler, assistant director of sales for Caterpillar Tractor Co., will become deputy director of the Construction Machinery Division of NPA.

Mr. Mohler will serve the Federal agency for one year, beginning March 15. During World War II he was on similar leave from Caterpillar to the War Production Board, where in 1943 he became director of the Production Division and assistant to the vice chairman. He returned to Caterpillar in 1944, after serving on the W.P.B. three years.

W. S. Zeigler, now manager of Caterpillar's eastern sales division, will take over the duties of assistant director of sales during Mr. Mohler's absence. Mr. Zeigler's present position will go to J. A. Justeson, now assistant manager of the western sales division. The new divisional assistant will be Frank McNamara, who is presently a Caterpillar district representative on the West Coast.

Shunk Promotes Newkirk

J. D. Newkirk has been appointed general sales manager of the Shunk Manufacturing Co. of Bucyrus, Ohio. Mr. Newkirk brings to his new position a wide experience of over twenty years in the construction industry, of which a substantial amount of time has been devoted to distributor liaison. He has an intimate knowledge of distributor problems and requirements.

J. D. Newkirk

Mr. Newkirk has been associated with the Shunk Manufacturing Co. for nearly three years in a direct sales capacity. He will now direct all sales activities, which include not only the Blade and Moldboard Division but also the new Contract Division which produces custom steel fabrications.

Mr. Newkirk replaces J. Austin Carrington, who resigned in January.

Heacock Named Chief Barber-Greene Engineer

H. A. Barber, vice president of Barber-Greene Co. has announced promotion of Roy C. Heacock to chief engineer in charge of development and engineering phases of the company's activities.

R. C. Heacock

With Barber-Greene six years, Mr. Heacock first was engaged in organizing and setting up the first Barber-Greene training school for the men who service Barber-Greene equipment throughout the country, and in many parts of the world. He was later on special development projects in the Engineering Department, and until his current promotion was Executive Engineer of Engineering Development.

Hailing from the deep South, Heacock was raised in Uniontown, Alabama. His interest in machines for highway construction started when he spent his summer vacations as a tractor operator for the county highway commission, and highway contractors.

He attended the Massachusetts Institute of Technology where he received his Master's Degree in Mechanical Engineering in 1940. He was elected to three Honorary Fraternities: Tau Beta Pi, which recognizes scholastic standing and leadership; Sigma Xi, which selects students who have the greatest potential for research work; and Alpha Phi Omega, which is for the furtherance of scouting. During his period at M.I.T., he spent one year with the General Electric Company and later was with the DuPont Company in Niagara Falls.

Engineer's Thesaurus Issued

The engineer's illustrated Thesaurus, by Herbert Herkimer, has just been published by The Chemical Publishing Co., Inc., 212 Fifth Ave., New York 10, N. Y.

Over 8,000 illustrations of machine elements and assembled machinery for the engineer, designer, draftsman and manufacturer to select the machine parts or equipment most suitable for his special purpose. It will also serve as an efficient guide for students and beginners.

Every conceivable type of machine element is clearly reproduced and identified. Where necessary an explanation of the method by which it accomplishes its particular function is given. For additional convenience there is an exhaustive index to save much page-thumbing.

The simple and logical system of the book will enable the engineer to find the information needed in the shortest possible time. Fasteners; adjusting devices; supports and structures; basic mechanical movements; elevators, cranes, derricks, conveyors; transmission of liquids and gases; combustion; prime movers; transportation; industrial processes; electrical appliances; comfort heating, cooling and air conditioning are the main classes treated in the book.

It contains 572 pages and is $6.00 a copy.

World Trenching Record Is 17,200 Feet in One Day?

Is 17,200 feet of 22-inch by 40-inch trench, dug in nine hours, on a single, working day, by a single Cleveland Trencher, the world's trench digging record? If not, what is tops?

George W. O'Connor, head of the O'Connor Construction Co. of Fromberg, Mont., claims the championship on the basis of his Cleveland Trencher's performance on October 4, 1951, during the construction of a gas pipe line from the Two-Dot gas wells to Warren, Montana, as reported by the Powell *Tribune*.

"As far as I know this is a world's record for a one unit ditcher," said O'Connor, "and most ditch men would call me a liar if I made this statement to them." Operator of the Cleveland Trencher during its record-making performance was Fagin Rehm of Burley, Idaho, whom O'Connor described as "the best ditcher operator in the area."

Mr. O'Connor's Cleveland Trencher is powered by an International Harvester Co. UD-9 Diesel Engine. O'Connor reported his crew had the advantage of ideal soil for the trenching operation on the bench of Elk Basin where the Company was laying 6 inch pipe.

Vice Presidents Named for Brown & Root

Addition of three new vice presidents for Brown & Root, Inc., has been announced by Herman Brown, president of the Houston firm.

They are Louis H. Durst, construction manager for the Houston area; G. Hinman, manager of the oil field department, and C. F. Horton, manager of transmission and pipe line projects. The three men are veterans of the Brown & Root organization and represent a total of sixty years with the company.

Mr. Durst, whose nickname "Preacher" was acquired at A. & M. College and has stuck with him since, is a native of Crockett, Tex., and has been with Brown & Root since 1928. He organized the company's purchasing department in 1941 and supervised all of purchasing of yard machinery and material for the construction of Brown Shipbuilding Company yard, as well as for the Houston Shipbuilding Corporation yard. He has been in charge of most of the miscellaneous construction for Brown & Root in the Houston area.

A native of Ranger, Tex., Mr. Hinman attended Rice Institute from 1931-1932. He played football for the Owls and most football fans will remember him as "Ox" Hinman. He joined Brown & Root in 1933 and is in charge of the company's big department, handling all types of heavy oil field construction on the Texas and Louisiana Gulf Coast.

Mr. Horton was born in Dallas and received his degree in civil engineering from Massachusetts Institute of Technology in 1930. He came to Brown & Root in 1935 in the road and street department. He spent a year as general engineer in charge of the Caracas, Venezuela, office of Brown & Root and later was project manager of the Kingsville Air Base, Concho Airfield, and the Naval Air Base at McAlister, Okla. Since 1949 he has been manager and in general charge of the firm's pipe line work.

Huber Announces Bulletin On Three-Wheel Roller

Huber 10-Ton 3-Wheel Roller.

A new bulletin describing "general purpose 3-wheel rollers" is being announced by Huber Manufacturing Co., Marion, Ohio.

Illustrations and information pertain to the 8, 10, 12, and 14 ton 3-wheel rollers, gasoline and diesel, in the Huber line of road maintenance equipment.

The bulletin is two-color throughout and 20 pages. It gives a comprehensive explanation of the various parts assembled in a roller, and describes the general purpose duties of the units.

To obtain a copy, contact your nearest Huber distributor or write to the home office. Ask for the "General Purpose 3-Wheel Roller Bulletin," Number H-150.

Thor Clay Digger with Interchangeable Parts

A new light-weight Thor pneumatic clay-digger featuring interchangeable parts to meet every clay digging requirement has been announced by Independent Pneumatic Tool Co.

The versatile new No. 16 Digger offers optional inside or outside trigger, closed retainer or latch retainer, choice of five

New Lightweight Thor Pneumatic Clay Digger by Independent Pneumatic Tool Company.

chucks for square, hexagon, or combination hexagon and round shank steels.

The manufacturers state that the interchangeable features were incorporated into the tool after three years of surveys and field tests.

The new Thor No. 16 weighs 20 pounds, is 19½ inches long and is equipped standard with chuck to take steels with ¾-inch square by 2¾-inch long shanks. Optional chucks take ¾-inch hexagon by 2¾-inch shanks; ⅞-inch hexagon by either 2¾-inch or 3¼-inch long shanks; and combination .882 hexagon and 1.027 round by 3¼-inch long shanks. Accessories available in these shank styles include clay spades or scoops, flat picks, saw tooth chisels, moil points, narrow chisels and chisel blanks.

Precipitators Ordered by Weirton Steel

Weirton Steel Co., of Weirton, W. Va. has ordered five Cottrell precipitators from Research Corporation for a new blast furnace being built as part of Weirton's expansion program.

Koehring Directors Elect Steelman and Brugger

At the annual meeting of the Koehring Company board of directors, J. R. Steelman was elected president and E. A. Brugger, vice president and general manager.

In his new post, Mr. Steelman succeeds G. E. Long who will remain as chairman of the board of directors, a position he has held dually with the presidency up to this time. Mr. Steelman also will be elected president of each of Koehring's four subsidiary companies.

Mr. Steelman's career in the construction industry started in 1929 with the American Bridge Co., in the drafting room and shop. He joined the TVA activity in 1934, devoting his time to construction plant design. In 1936 he became associated with the Koehring organization, serving first as sales manager for the C. S. Johnson Co., a Koehring subsidiary located in Champaign, Ill. He was named president of the Johnson Company in 1941 and moved into the parent Koehring company as vice president in charge of sales in 1943.

Maintaining an active interest in many of the construction industry organizations and activities, Mr. Steelman recently was reelected President of the Construction Industry Manufacturers Association, the Manufacturers Division of the American Road Builders Association.

Mr. Brugger is a 35-year veteran with Koehring. After serving as assistant purchasing agent, during which time he organized the first Koehring production department, he was named director of purchases in 1930 for Koehring Company

J. R. Steelman *E. A. Brugger*

and its subsidiaries. He transferred to the Parsons Company, a Koehring subsidiary at Newton, Iowa, in 1938 and served as the firm's president and general manager for 10 years. Late in 1948 he returned to Koehring to become vice president in charge of production.

Maryland Road Project Placed Under Contract

A contract to widen and resurface five miles of Maryland Route 65 from Hagerstown to Lappans, in Washington County, has been awarded to the M. J. Grove Lime Co., whose bid of $636,000 was the lowest of six submitted to the Commission on January 8.

Similar improvement of six and one-half miles of the same route southwest of Lappans is now about half finished under a contract awarded last year to the American Asphalt Products Co. Completion of the Grove concern's contract will give Western Maryland motorists a wider, safer road for the entire distance between Hagerstown and Sharpsburg.

Globe-Girdling Travelers Conclude LeTourneau Tour

Route of 42,000-mile LeTourneau Tour.

Two LeTourneau Export Department men, who took off on a round-the-world trip in February, 1951, have completed their globe-girdling tour. They put 42,000 miles behind them.

They are R. L. (Bob) Wollberg, educational program manager on the gigantic swing, and Max Loertscher, instructor. Both men instructed.

Their epic journey, whose purpose was to bring to the service personnel of LeTourneau's far-flung distributors and their customers the latest information on maintenance and servicing of LeTourneau equipment, got underway in Staines, England, in February, 1951. The concluding school was held in Mexico City, Mexico late in December, the travelers arriving in Peoria early in January.

Locations at which they conducted schools—each of two weeks' duration—between their first and final stops were: Casablanca, French Morocco; Bombay, India; Calcutta, India; Bangkok, Siam; Karachi, Pakistan; Johannesburg, Union of South Africa; Elisabethville, Belgian Congo; Rio de Janeiro, Brazil; Sao Paulo, Brazil; Santiago, Chile and Bogota, Colombia.

The first week of each school was devoted to the mechanics and theory of the LeTourneau electrical system used on the high speed dozing and hauling equipment the company manufactures at plants located in Peoria, Toccoa, Ga., Vicksburg, Miss., and Longview, Tex. The second week was devoted to the mechanical functions of the machinery. To supplement the lectures, more than 200 slides were used in conjunction with various actual parts embodied in the equipment—generator, electric motor, transmission clutch and gear box.

Charts were used to point out electrical circuits, fuel systems and the air line set up. Question and answer periods at frequent intervals permitted clarification of points requiring elaboration.

Two unique features marked the conduct and progress of each school—how language requirements were met, and the use of special books.

Languages used totaled 10—English, French, German, Spanish, Portuguese, Italian, Siamese, Indonesian, Urdu and Hindustani.

With English being the almost universal language that it is, it was used for lecture and instructional purposes at each of the schools, Wollberg calling upon Loertscher to bring his fluency in French, Spanish and German into play

Left—Bob Wollberg and Max Loertscher, right, tell of tour to Paul Fulford, LeTourneau expert manager.

when the need required it. When men attending did not use the more commonly-known languages, the information was imparted to interpreters in languages they did understand, and they in turn translated it into the language of the people to whom it was being directed.

The other unique factor in conducting the schools was the use of special books, designed and assembled in Peoria by LeTourneau specifically for this tour. This special book was set up for both the electrical and mechanical sections. The left hand pages carried illustrations, and the right hand pages were left blank for the express purpose of allowing each student to take notes in his own language. Thus, at the conclusion of the school, each person had a notebook in his own language.

Homebuilding Declines in Tulsa Area

Homebuilders in the Tulsa metropolitan area started 265 new privately financed dwelling units during January, approximately 150 fewer units than in the preceding month, according to Brunswick A. Bagdon, Regional Director of the U. S. Department of Labor's Bureau of Labor Statistics in the South.

National A. G. C. Elects Officers

Above—Current officers of the Associated General Contractors of America include, left to right: H. E. Foreman, managing director, Washington, D. C.; C. P. Street, of McDevitt & Street, Charlotte, N. C., vice president; A. S. Horner, of Horner Construction Co., Denver, Colo., president, and William Muirhead, of Muirhead Construction Co., Durham, N. C., re-elected treasurer.

Associated General Contractors of America concluded its thirty-third annual convention at Detroit last month by installing A. S. Horner, Denver contractor, as president, and C. P. Street, of Charlotte, as vice-president.

Mr. Horner is head of the construction company which bears his name and is a native of Topeka, Kans. Mr. Street is associated with McDevitt & Street Co., prominent in southern construction circles and is a graduate of Vanderbilt University.

W. Murray Werner, of the Werner Co., Shreveport, La., was named to head the building contractors' division; with F. W. Heldenfels, Jr., of Heldenfels Brothers, Corpus Christi, head of the highway contractors division, and Edward P. Coblentz, of McLean Contracting Co., Baltimore, head of the heavy construction and railroad contractors' division.

Twenty new directors included John R. Lathram, of Sullivan, Long & Hagerty, Bessemer, Ala.; W. D. Amis, of Amis Construction Co., Oklahoma City; F. L. Shackelford, of Potter-Shackelford Construction Co., Inc., Greenville, S. C.; F. S. Oldt, of F. S. Oldt Co., Dallas and B. F. Parrott, of B. F. Parrott & Co., Inc., Roanoke, Va.

The convention passed resolutions advocating advanced planning; relaxation of Regulation X credit controls on housing; an $810,000,000 federal aid authorization for the next two years; legislation permitting court review of disputes between government departments and contractors; changes in the renegotiat on procedure.

Opposition was registered to exercise of powers intended for wage stabilization in promoting health and welfare funds. The Secretary of Labor was urged to maintain differentials prevailing between building and heavy highway construction and to give realistic consideration to scales actually prevailing in the various localities.

The convention, which was attended by more than 1,000 delegates from all parts of the country, condemned "as wasteful of public funds the practice of doing construction with federal agency forces."

The Wage Stabilization Board was urged to reject a union proposal that all work around and in properties and mines of steel companies be done by members of the union.

The Building and Construction Trades Department of the American Federation of Labor was asked to reconcile the jurisdictional claims of the various crafts.

Government departments were requested to discontinue the practice of asking bids on alternate designs and revert to the policy of soliciting all proposals on the same design.

Emphatic disapproval was evidenced of any departure from the traditional practice of permitting the general contractor to secure surety bonds from a company of his own choosing.

Other resolutions were in opposition to valley authorities "as a dangerous departure from our constitutional and democratic form of government" and an insidious threat to our private enterprise system; to federal regulation of safety on any but federal projects.

The convention reaffirmed its recommendation to public and private bodies that they award construction contracts to competent general contractors to secure maximum value and undivided responsibility.

H. E. Foreman, in his report, cited the $39,000,000,000 construction record of 1951 and declared mobilization needs have thrown the construction industry out of balance. He said as the pressure of defense needs eases there will be less need for confining civilian construction within the restrictions of the Controlled Materials plan.

State Highway Problems

(Continued from page 38)

sociation of State Highway Officials meeting in Omaha, Nebraska, October 22-26, 1951, adopted a resolution calling on the controlled materials agencies to allot 2 per cent of the national production of steel for highway purposes and expressed its full and complete confidence in the manner in which the Bureau of Public Roads has handled the steel problem.

In closing, there is a need and a very strong need for a concerted effort on the part of all highway officials, the highway contracting industry, the automobile, tire and petroleum industries, and all interested trade and user associations, to bring to the public the true story of the highway problems, and especially financing, in a concise and convincing way so that the public may decide if it is willing to pay for the class of highway facility that it desires and is now requesting. There is evidence that this thinking is beginning to take form and action will be forthcoming; however, for too long the views of some of these groups have been at cross purposes, divergent, self-centered and plain selfish.

This allied effort should also do everything possible to increase the efficiency in highway department operation, to divorce it from political influences as far as practicable, and to bring about conditions that will encourage and induce qualified and trained young men to make careers in the highway departments. All interested parties should be alert to see that highways are given proper consideration in the Nation's Capitol, especially at a time when it appears certain that critical steel will be sent abroad and when unprecedented procedures could be instituted to cut the amount of Federal Aid for roads, resulting in a program that would not be compatible with the needs nor desires of the State Highway Departments.

New Orleans Elevator

(Continued from page 34)

"We have had continuous urging to build this elevator addition for the past decade—most of it coming from waterways men and railroad officials who know what business is not being directed to New Orleans because of inadequate facilities. We are confident that grain shippers throughout the Mississippi Valley will divert their business to New Orleans."

The port commission has finished more than a third of a broad expansion program begun in 1948. Three wharf construction jobs have been completed, including the $1,500,000 Esplanade Avenue wharf. Rebuilding of the Erato Street wharf, with expanded banana-handling capacity, is now nearly complete, as is an expansion of the Public Commodity Warehouse wharf.

In addition, a new wharf, the Thalia Street Wharf, is in the planning stages. It will be built between Erato and Robin Street wharves, in the last remaining open space on the east bank of the river between the public grain elevator and the Industrial Canal.

Twenty-Four Missouri Jobs Bid at $2,392,570

Twenty-four projects were bid a total of $2,392,570 at the February opening of the Missouri State Highway Department. Located in fourteen counties, the projects include:

Phelps—Route 66, Project FI-176(19)-A, 4.612 miles grading, culverts, bridges and 24 foot Portland concrete cement pavement, Porter DeWitt Construction Co., Poplar Bluff, Mo., $1,032,859;

Phelps—Route 66, Project FI-176-(19)-B, .489 mile grading, culverts and 24 foot Portland concrete cement pavement, Porter DeWitt Construction Co., Poplar Bluff, Mo., $88,594;

Phelps—Route 66, Project FGI-176(20), .214 mile grading, culverts and 24 foot Portland concrete cement pavement, Porter DeWitt Construction Co., Poplar Bluff, Mo., $108,717;

St. Louis—Route 30, Section 2-B, .471 mile grading, culverts and asphalt concrete pavement, 40 foot wide, Granite Bituminous Paving Co., St. Louis, Mo., $17,136;

St. Louis—Route 66TR, Section 14-A, 3.990 miles grading, culverts and asphalt concrete pavement, 40 foot wide, Granite Bituminous Paving Co., St. Louis, Mo., $162,357;

St. Louis—Route 66AP, Section 15-A, .231 mile asphaltic concrete and 40 foot pavement, Granite Bituminous Paving Co., St. Louis, Mo., $8,401;

St. Louis—Route 66TR, Section 13-C, 3.196 miles grading, culverts and 40 foot asphalt concrete pavement, Granite Bituminous Paving Co., St. Louis, Mo., $138,870;

St. Louis—Route 66, Project UI-892 (5), alterations on MacArthur Bridge over Missouri Railroad, J. E. Latta Construction Co. and J. E. Latta, St. Louis, Mo., $295,644;

Harrison—Route SN, Section 52, .892 mile 22 foot rolled stone base and 20 foot seal coat, Gene McClain, Allerton, Iowa, $6,794;

Harrison—Route SB, Section 52, 7.528 miles 22 foot rolled stone base and 20 foot seal coat, Gene McClain, Allerton, Iowa, $62,206;

Gentry—Route SP, Project S-932 (1)-A, 2.216 miles grading, culverts and gravel or crushed stone surface, Clark & Farmer Contracting Co., Inc., Camdenton, Mo., $20,072;

Gentry—Route SP, Project S-932 (1)-B, 3.996 miles grading, culverts and gravel or crushed stone surface, Clark & Farmer Contracting Co., Inc., Camdenton, Mo., $40,199;

Macon—Route SO, Project S-1060 (1)a-A, 3.058 miles grading, culverts and a bridge, P & S Construction Co., Macon, Mo., $29,535;

Macon—Route SO, Project S-1060 (1)a-B, 4.877 miles grading and culverts, P & S Construction Co., Macon, Mo., $18,641;

Holt—Route 118, Section 52, 4.554 miles 22 foot rolled stone base and 20 foot seal coat, Vance Brothers, Kansas City, Mo., $51,840;

Grundy—Route SB, Project S-1146 (1)c, .417 mile grading, culverts, bridge and gravel or crushed stone surface, Clark Construction Co., St. Joseph, Mo., $38,291;

Henry—Route SC, Project S-214 (2)b, .444 mile grading, bridges and gravel or crushed stone surface, Knutson-Gould Construction Co., Kansas City, Mo., $77,327;

Lafayette—Route SFF, Project S-748 (1)-B, .363 mile grading, culverts, bridge and gravel or crushed stone surface, Clark Construction Co., St. Joseph, Mo., $27,949;

Howard—Route SZ, Project S-1065 (1)b, .887 mile grading, culverts, bridge and gravel or crushed stone surface, E. F. Kieselbach Construction Co., Jefferson City, Mo., $25,780;

Moniteau — Route SN, Project S-1156 (1)-D, 7.39 mile grading, culverts, bridge and gravel or crushed stone surface, E. F. Kieselbach Construction Co., Jefferson City, Mo., $51,407;

Caldwell—Route SB, Project S-259 (3), 2.374 miles grading, culverts and gravel or crushed stone surface, Quinn Construction Co., Inc., Kansas City, Mo., $31,846;

Adair—Route SK, Project S-1041 (1)a, 4.597 miles grading and culverts, Brooks Construction Co., Kahoka, Mo., $19,295;

Livingston—Route SKK, Project S-771 (3)a, 4.100 miles grading and culverts, Frank Trager, Chillicothe, Mo., $15,219;

Division 1—Group 1 (1952),23.715 miles oil surface treatment, Vance Brothers, Kansas City, Mo., $23,579.

Five Projects at Georgia University

Five projects are currently active on the campus of the University of Georgia at Athens, Ga. Four have been placed under contract and one is in the preliminary plan stage. The projects, listing the architects and where the award has been made, the contractor, are:

Library Building—Alfred Morton Githens, New York, architect; Cooper, Bond & Cooper, Inc., Atlanta, supervising architect; Virginia Engineering Co., Newport News, Va., general contractor;

Men's Dormitory — Tucker & Howell, Atlanta, architect; Ray M. Lee Co., Atlanta, general contractor;

Completion of School of Veterinary Medicine—Cooper, Bond & Cooper, Inc., Atlanta, architect; Van Winkle & Co., Atlanta, general contractor;

Women's Dormitory—Tucker & Howell, Atlanta, architect; Ray M. Lee Co., Atlanta, general contractor;

Practice School—Stevens & Wilkinson, Atlanta, architects, with preliminary plans completed.

$500,000 Telephone Exchange Planned

Southern Bell Telephone and Telegraph Co. is preparing to build a new dial office at Shreveport, La. The one-story and basement building is expected to involve expenditure of $200,000, with an additional $300,000 for the initial equipment installation. Date of opening bids is indefinite at the present time.

County Road Construction with Emulsified Asphalt

(Continued from page 39)

tory tests. The emulsified asphalt was diluted with approximately 2½ gallons of water for each gallon of emulsion before hauling to the travel mixer. The windrowed aggregate was quite dry, and the high percentage of water in the diluted emulsion served the dual purpose of breaking down the clay lumps to obtain an intimate mixture with the sand and gravel aggregates, and as a carrying agent to readily coat the colloidal particles with asphalt. This native soil, which is colloquially known as "buckshot clay" is highly active, but no difficulty was encountered in getting a uniform and thorough blending with the gravel and sand in the mixing process, and no uncoated particles were found in the mix.

The finished mix made a dense, stable, waterproof base, on which was applied .35 gal. imiscible emulsified asphalt primer per square yard. A single surface treatment of .4 gallon of quick breaking, high viscosity emulsified asphalt and 30 pounds of ⅜-inch maximum crushed slag per square yard, completed the job. After 13 years of traffic, which has included steel tired farm wagons, wheeled tractors, and transport trucks, this road is generally in very good condition, showing only edge damage from farming implements. Maintenance during this 13-year period has consisted only of nominal patching of these few edge failures, and one seal coat of emulsified asphalt and ⅜-inch slag. Non-skid properties have been excellent throughout its entire life. A detailed discussion of this project was presented by the writer at the A.R.B.A. Convention at San Francisco in March, 1939.

While a double surface treatment on the stabilized base would, of course, have been more desirable, the single treatment was used to keep the total cost within the funds available for the project. The ⅜-inch size aggregate was selected to give a smooth riding surface. However, on the next project done by the county, using the same type base, a single surface treatment with ¾-inch slag was used. This size, though somewhat harsh at first, soon smoothed out and formed a mosaic-like surface which after 12 years of similar traffic is holding up well except where mutilated by farming implements.

In November of 1951 a 6.3-mile section of emulsified asphalt double surface treatment was completed in Clarke County, Mississippi, under Mississippi's State Aid Program for county road construction recently inaugurated. It was built under contract at a cost of $10,000 per mile. This included drainage structures, light and heavy linear grading, a six-inch base of local friable material stabilized with washed gravel, lime, fertilizer, and seeding. This project was originally designed for crushed aggregate, but the demand for crushed aggregate in the coarser sizes exceeded the supply at the time of construction. To enable the completion of the job during that year's construction season, specifications were

(Continued on page 48)

The finest masonry work starts with

Cumberland Masonry Cement

Dixie Saving Stores Warehouse, Chattanooga; Verhey Construction Co., Contractor; William A. Martin, Architect; Garland Sherman, Masonry Contractor; Hibbler-Barnes Co., Masonry Cement Supplier.

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Any quantity of Cumberland Masonry Cement will be shipped in mixed carloads with other types of Cumberland Cement.

County Road Construction

(Continued from page 46)

changed to permit readily available uncrushed gravel for the coarse aggregate application.

Approximately .45 gallon of high viscosity quick breaking emulsified asphalt per square yard was applied on the primed sand clay gravel base of six inches compacted thickness. The temperature of the emulsified asphalt during its application was kept at approximately 140°F. with no evidence of pooling or runoff. The shot was covered with approximately .5 cubic foot per square yard of clean uncrushed gravel, and rolled. This first course of gravel was placed the full length of the job before the second applications of emulsified asphalt and finer aggregate were begun, and traffic was not rerouted at any time during construction. Although prevailing weather temperatures were considerably lower than normal during this phase of construction, an excellent, uniformly bonded mat was obtained. The gravel aggregate met the following gradation requirements: 100% passing 1¼-inch screen, 95-100% passing 1-inch, 30-60% passing ¾-inch, -10% passing ½-inch, -3% passing No. 4. The high viscosity asphalt emulsion contained approximately 65% residual asphalt, and had a minimum demulsibility of 75.

Placement of the second aggregate course began immediately upon completion of the mat course. The same grade of emulsified asphalt was applied at the same temperature as for the first course, at the rate of .38 gallon per square yard, covered with .28 cu. foot of crushed slag, and rolled. The slag was graded to meet the following requirements: 100% passing ¾-inch screen, 95-100% passing ½-inch, 40-90% passing ⅜-inch, 15% passing No. 4, and 3% passing No. 16 screen. The finished job shows a high percentage of retention for both types of aggregate, has a uniform texture, and excellent nonskid characteristics.

Maximum utilization of limited numbers and kinds of equipment is another objective in the construction of economical county roads. This assumes particular importance when asphalt construction must be done principally with the equipment normally available to county forces not equipped for large scale paving operations, or by smaller contractors with limited equipment. Mixing on grade with the common patrol grader can accomplish much in this direction. This eliminates the necessity for heating or drying materials, even when the aggregate to be mixed is pumped or dredged directly from a stream or lake bed. Since the mixing of emulsified asphalt is not adversely affected by the dampness of aggregates, mixing by motor patrol can begin as soon as the free water has drained from the windrow.

The patrol graders can also be employed to aerate the mix to proper moisture content for compaction by turning the windrow and shifting its position at intervals. This same patrol grader then becomes an even more versatile item of equipment in the road mix job on being employed to lay out the mix for compaction, thereby eliminating another expensive item of equipment in the form of special asphalt spreading machinery. We may assume the county or contractor to have loading, hauling and compaction equipment, and a water sprinkler can be easily rigged up. With the possible exception of an asphalt distributor a road mix job can then be built with the equipment usually available to average counties or contractors engaged in road construction. Requirements for specialized asphaltic heating, mixing or spreading equipment are simply eliminated.

Current pressure of defense work, and the requirements for vast numbers of skilled workmen by the armed forces have in many areas resulted in a scarcity of trained and experienced labor for asphaltic construction of county roads. It consequently becomes more important than ever that we achieve economy in county road construction by using unskilled and semi-skilled labor to the maximum extent possible, and keeping the required numbers of skilled and experienced construction men to a minimum. This objective alone is sometimes the deciding factor in choosing an asphaltic material which may be mixed cold and laid cold; one which permits wide latitudes in laying out time and allows comparatively long periods for compaction and finishing.

In using large numbers of unskilled la-

bor, the safety factors associated with asphaltic materials also become increasingly important. As emulsified asphalt is non-inflammable its transportation and application may be safely intrusted to inexperienced personnel without danger of fire hazards. Because elevated temperatures are unnecessary at any time, the possibility of bodily injuries from burns is virtually eliminated, and pumping, transporting, and handling of the emulsion becomes a simple matter.

In addition to the maximum utilization of equipment and labor, advance planning and scheduling of construction operations further lowers costs by increasing efficiency and shortening construction time.

Hinds County, Mississippi, in the fall of 1950 built a 4.6 mile, 2½-inch asphaltic concrete surface 20 feet wide, on a 6-inch sand clay gravel base, using regularly employed county labor and county owned equipment. Only one member of the construction crew had had any previous asphaltic experience, but this job was completed in less than thirteen calendar days, or ten working days. A nearby creek bar was the source of the sand gravel aggregate, which was picked up by clamshell, scalped through a 1¼-inch vibrating screen to remove oversize, and dumped at calculated intervals on the roadway by contract for $1.60 per cubic yard. The material was quite uniform and graded as follows: 100% passing 1¼-inch screen, 99% passing ¾-inch, 94% passing ½-inch, 87% passing ¼-inch, 80% passing No. 10, 49% passing No. 40, 4% passing No. 80, and 0% passing No. 200. Although there was very little material passing the No. 80 screen, laboratory tests indicated that this aggregate could be used without admixture to produce a stable surface-course-mix.

It was mixed by patrol graders with 2½ gallons of emulsified asphalt per square yard. The emulsified asphalt specified contained a residue of 60%-65%, had

Architects Slate Convention June 24 in New York

The importance of the design of buildings in forming environments for human activity will be the theme of the eighty-fourth annual convention to be held June 24-27 in New York by the American Institute of Architects.

The theme of the convention, announces President Glenn Stanton, will be developed in its program to illustrate the formative influence of the architect's work, whether in the design of a modest individual house or of an entire city. The meeting will be addressed by leading members of the profession and guests especially chosen for their ability to contribute to the theme. A final program with the names and subjects of all speakers will be released early in May.

Arthur C. Holden, New York architect and convention committee chairman, heads a group that is arranging visits to buildings in New York, tours, inspections of architectural offices and other activities that will further illustrate the idea of architecture as a factor in man-made environment.

John E. Mathews Bridge

(Continued from page 33)

Piers 6E through 19E, was considerably slower due largely to the fact that all of these piers are located either in open water or on a marshy island much of which is incapable of supporting heavy equipment. Construction of two small cofferdams was required for each of the piers in this group. Work was started in this group April 3, 1951 and final pour made January 4, 1952.

Worthy of special note is the vast amount of equipment which is being used by the contractor on this project. Five floating "Whirley" type steam cranes, a floating concrete plant, about 15 barges of various types and four Diesel tugs comprise the bulk of the floating equipment. The floating concrete plant is one of the largest in the world, having a capacity up to 120 cubic yards per hour. Mixing is done by two 56 cubic foot capacity mixers, each fed from separate batchers which receive gravel, sand and cement from an overhead hopper common to both batchers. A "Whirley" crane mounted on the plant transfers to the overhead hoppers gravel and sand from barges tied on each side of the plant. The cement barge is normally kept tied to the stern of the plant, and cement is blown by air pressure through pipes to the overhead hopper.

The contractor's shore plant is well equipped as a base of operations and for loading out materials. All gravel, sand and cement is shipped to the site by rail. A loading dock constructed last March is equipped with two tracks leading to the end where gravel and sand is dumped from bottom dump cars directly to decks of barges which can be pushed under the specially designed loading ramp.

A partial list of estimated quantities for substructure follows:

Concrete, Seal, 15,695 cubic yards.

Concrete, Class A in Footings, 12,374 cubic yards.

Concrete, Class A, Above Footings, 27,627 cubic yards.

Reinforcing Steel, 2,083,100 pounds.

Steel Piling, 14 Inch H.P. 73 lbs., 99,830 Lineal Feet.

Steel Piling 12 Inch H.P. 53 lbs., 20,114 Lineal Feet.

Work on erection of the superstructure actually started November 7, 1951. Steel erection started from each abutment and is now proceeding on both sides towards the main cantilever span over the Terminal Channel.

Beam spans on the precast concrete pile bents each consists of nine 33 inch W. F. 130 pound beams. Bents are spaced 50 feet center to center. Superstructure steel for both approaches to the main river crossing consists of girders connected by floorbeams which in turn support rolled beam stringers. Girder spans vary in length from 80 to 115 feet.

The main river crossing consists of truss spans from Piers 2W through 5E. Span lengths of the main cantilever truss with its anchor arms extending from Pier 2W to Pier 2E have been described. The span between piers 2E and 3E is a simple truss span having a length of 270 feet center to center of bearings. The span between Piers 4E and 5E is an anchor span of substantially the same length. A secondary channel known as the "Arlington Cut" passes between Piers 4E and 5E. The span over this channel is a cantilever span, having a cantilever arm which extends 101 feet 7½ inches beyond Pier 4E and supports one end of a simple truss span, the other end of which is supported by Pier 5E.

On the east side steel is, at this writing, erected and completely riveted on all beam spans. Erection of the girder spans is complete through Pier 14E and riveting is under way. On the west side erection is complete from West Abutment through Pier 15 W, and riveting is under way.

A partial list of estimated quantities for Superstructure follows:

Structural Carbon Steel in girder and beam spans, 10,761,000 pounds.

Structural Carbon Steel in truss spans, 12,536,000 pounds.

Structural Silicon Steel in truss spans, 2,693,000 pounds.

Concrete, Class A in Deck, 10,290 cubic yards.

Accompanying photographs show overall progress as of December 19, 1951.

Consultants to the State Road Department of Florida for design and for supervision of construction are Reynolds, Smith and Hills of Jacksonville, Fla. and Parsons, Brinckerhoff, Hall & MacDonald of New York, N. Y., Associated Architects and Engineers, with the writer

serving as resident engineer in charge of supervision. Construction of the preliminary contract for Piers 3W through 10W was supervised directly by the State Road Department.

Contractors on the various phases of the project are as follows:

Substructure: Preliminary Contract (Piers 3W through 10W), George G. Auchter Co., of Jacksonville, Fla.;

Substructure: Main Contract, Merritt-Chapman & Scott Corp., of New York;

Superstructure: Bethlehem Steel Co., of Bethlehem, Pa.;

Sub-Contractors: (on the Superstructure) are: Concrete deck, mall, sidewalks, curbs and handrail, Industrial Contracting Co. and Associates, of Minneapolis, Minn.; Painting, Conomos Painting Co., of Pittsburgh, Pa.; Electrical Work, Miller Electric Co., of Jacksonville, Fla.

400-Mile Gas Line Revealed in Washington Testimony

A Texas Gas Transmission Corp. spokesman revealed last month that his company is prepared to build and place in operation by November a 400-mile, 26-inch natural gas pipe line that will carry more gas supplies to midwestern and Appalachian markets.

H. L. Stowers, the company's chief engineer, told a Federal Power Commission hearing that the company has received necessary steel allocation from the Petroleum Administration for Defense and has the steel and other critical materials needed for the project on firm order.

Texas Gas has asked the Federal Power Commission for authority to build the $33,752,705 pipe line to carry additional supplies to residential and industrial consumers in Arkansas, Tennessee, Kentucky, Indiana, Illinois, Ohio and the Appalachian region.

The new pipe line, which will extend in six sections from Bastrop, La., to a point near Louisville, Ky., will enable the company to increase its deliveries by 240 million cubic feet of gas a day and will raise the system to approximately 950 million cubic feet a day.

Constructors Association Elects New Officers for 1952

J. J. O'Donnell, personnel and labor relations manager for the Lummus Company, New York, has been elected president of the National Constructors Association, an organization composed of leading firms engaged in construction and engineering of chemical plants, steel mills and petroleum refineries.

Other officers and committee chairmen for 1952 include: C. D. Haxby, Rust Engineering Co., Pittsburgh, vice president; L. T. Gardiner, Fluor Corp., Ltd., Los Angeles, chairman, labor committee; J. F. O'Neill, Chemical Construction Corp., New York, and R. C. Siciliano, Procon Inc., Chicago, vice chairman, labor committee; W. Q. Ashley, Foster Wheeler Corp., New York, chairman, foreign committee, and F. R. Griffin, Koppers Co., Inc., Pittsburgh, chairman, safety committee.

Baltimore Filter Plant

(Continued from page 22)

will be provided at one side of each filter. The underdrain system will be of vitrified clay tile over which will be placed six inches of gravel, four inches of torpedo sand 24 inches of filter sand, of .54 millimeter effective size.

The water level on the filters can fluctuate over a range of two feet in consonance with a similar two-foot fluctuation on the sedimentation basin. The 24-inch rate controller to be installed on each filter will discharge into the clear well under the filters.

Clear Well—One-fourth of the area under the filters will serve to collect the un-limed filtered water and conduct it to the lime portion of the chemical building. Pebble lime will be delivered to the Ashburton plant by a city truck equipped with pneumatic unloading facilities, which is now used to deliver pebble lime to the Montebello filtration plant from freight cars at a city siding.

A pneumatic system at Ashburton will place the pebble lime in four overhead tanks, each with a capacity of 50 tons. The lime will be fed through slakers to un-limed filtered water channel directly below, so that lime slurry will not have to be transported through pipes. The limed water will flow to the clear well under the remaining area of the filters. Twenty minutes detention, and three 180-degree turns with several restrictions to flow will induce good mixing of the lime solution with the water. .

The water will pass through two 7-foot by 3.5-foot finished water venturi meters. One of these 7-foot meters will be connected to the existing 7-foot tunnel of the distribution system supplying the eastern part of the second zone and the 36 m. g. Guilford reservoir. This four-mile long 7-foot tunnel between Ashburton and the eastern portion of the middle zone will be interconnected into the existing distribution system by means of three uniformly distributed connections, the first at Stony Run, the second at York Road and the third and farthest in the vicinity of the Montebello filtration plant and Hillen pumping station.

The other 7-foot venturi meter will connect to the 3,000-foot length of 7-foot pipe which will discharge approximately half of the plant capacity at the extreme far end of the 220 m. g. Lake Ashburton reservoir. The detention in Lake Ashburton will be between four to six days and additional chlorine can be applied to its finished water influent line, if desired.

All of the water entering Lake Ashburton will pass through the entire reservoir before being used in the western half of the second zone or before being pumped to the 21 m. g. Pikesville reservoir through the existing pumping station. The existing supplemental chlorine station near the Lake Ashburton outlet structure will be maintained to add chlorine to the effluent from Lake Ashburton when required.

Studies were made to determine the proper water level for the Ashburton plant in view of the 280,000 cubic yards of excavation required, of which sixty per cent will be rock. The water level as finally adopted has the advantages of: The entire plant will have rock foundations with some footings just at the rock line; Lake Ashburton can be raised three feet to provide 20 m. g. additional finished water storage; 28 billion gallons, or 65 per cent from the Liberty reservoir can flow by gravity to Ashburton, and, .f the plant water level were raised a few feet the cost of concrete backfill on the rock would exceed the cost of the saving in rock excavation; the gravity flow from the Liberty reservoir would be reduced and no additional storage would be obtained at Lake Ashburton.

More Women Engineers

More women will enroll in engineering courses during 1952 to graduate as professional engineers; production equipment and methods will be streamlined; a new conception of long-distance freight hauling will gain momentum; the battle of military versus civilian production will continue and office equipment demands will continue to exceed that of the normally heavier demands of the machine tool industry. These, according to Clifford E. Evanson, president of T.A.B. Engineers, Inc., will be the high spots of engineering this year.

Louisiana Highway Bids Total $888,259

Louisiana's first three highway department openings resulted in low bids totaling $888,259. Listed by parishes the projects covered included the following:

East Feliciana Parish — 5.104 miles of grading, small drainage structures, gravel base course, or as alternate, soil cement base course and bituminous surface treatment, State Project 61-05-25, McManus-Clinton Highway, Route 35, W. H. Patterson & Co., Baton Rouge, $131,958;

Union—7.706 miles of grading, small drainage structures, four at 20 feet, concrete slab span bridge, gravel base course, or as an alternate, soil cement base course and bituminous surface treatment, State Project 154-01-04 and 154-02-05, Farmersville-Spearsville highway, Central Construction Co., Inc., Monroe, $351,083;

Jefferson Davis — .538 miles of grading, drainage structures, widening and patching existing concrete pavement and surfacing with hot bituminous mixture, State Project 3-06-08 and 3-07-06, Russell Avenue, State Route 2, W. R. Aldrich & Co., Baton Rouge, $101,273, method one;

DeSoto—5.2 miles of base course iron ore (Grade A) placed and spread, State Project 35-03-09, Pleasant Hill-Pelican Highway, State Route 1, Barnhill Brothers, Many, $30,590;

Vermilion — washed gravel at Mulvey, State Project 703-09-47, Gifford Hill & Co., Inc., Alexandria, $5,075;

St. Tammany—washed gravel, Requisition 1837A, Kivett & Reel, Inc., Sun, $24,105;

St. Tammany—washed gravel, Requisition 1837A, F. J. J. Sloat Dredging Co., Slidell, $10,195;

Vermilion — 1.773 miles grading, small drainage structures, seven at 20 feet, concrete slab span bridge and Portland cement concrete pavement, State Project 396-30-01, Kenney Coulee-Abbeville Highway, State Route No. 1997, T. L. James & Co., Inc., Ruston, $193,275;

Tangipahoa — washed gravel, State Project 703-09-32, Anderson Gravel Co., Amite, $3,220;

St. Landry—washed gravel, State Project 703-09-41, Gifford Hill and Co., Inc., Alexandria, $2,232;

Pointee Coupee—washed gravel, State Project 703-09-45, Paul A. Lambert, Simmesport, $11,372;

Vermilion—clamshell spot-dumped, Requisition 37582A, Stevens & Co., Inc., New Orleans, $6,480;

Ouachita—One 80 by 40 by 14-foot prefabricated steel building extension erected on concrete foundation and concrete floor, State Project 882-01-05, Sicard shop building extension, Armco Drainage & Metal Projects, Inc., Alexandria, $9,870;

St. Charles—One 30 by 96 by 12-foot prefabricated steel building, State Project 602-20-01, Luling Unit barn, C. B. Construction Co., Inc., Baton Rouge, $7,618.

Southern Construction

(Continued from page 20)

297,000; assembly buildings, $2,421,000; commercial structures, $2,199,000.

Public building, down nineteen per cent from the January valuation, included $24,908,000 for school building, this latter a slight increase. Other public building was down. The total for this was $53,305,000. In the preceding month, the figure stood at $73,676,000.

The $57,640,000 for heavy engineering type construction embraced $38,512,000 for dams, drainage-earthwork and airports; $10,370,000 for sewer and water work, and $8,758,000 for government electric projects. In the preceding month, the totals for the three, in that order, were $54,252,000, $9,720,000, and $9,167,000. In other words, water and sewer work increased more than six per cent; the others declined.

Perhaps the outstanding project in its class in the South was the $13,907,379 low bid received by the Mobile office of the Corps of Engineers for construction of the spillway, power house and switchyard for the Jim Woodruff dam project in Florida. The low bidder was the Perini-Walsh-Mills and Blythe Brothers Construction combination.

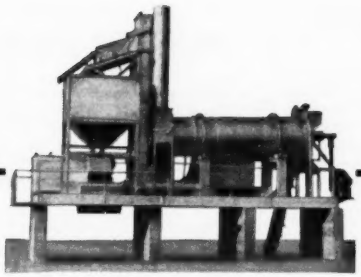
Other large projects mentioned in reports in the daily bulletin of the MANUFACTURERS RECORD were the Vickers pump plant, a $3,000,000 enterprise at Joplin, Mo.; Southwest Public Service generating plant, cost $2,300,000, at Amherst, Texas; $7,878,600 Texas Pipeline Co. project; $16,000,000 Esso Standard Oil refinery expansion; $2,000,000 Consolidated-Vultee improvements at Fort Worth; $30,000,000 Norco, La., refinery expansion of Shell Oil Co., and the Reichhold phenol chemical plant proposed at Houston at a cost of $5,000,000.

A National Production announcement late in February may ease one regulation to relieve the stifling effect of federal restriction. It will allow self-authorization of five tons of steel, not to include more than two tons of structural, in construction of small commercial, school and other non-industrial type buildings.

Simultaneously, that government agency announced that 645 religious, municipal and community building projects throughout the country, aitogether estimated to cost in excess of $200,000,000, "have been approved for immediate commencement with allotment of material to be made for use in the latter half of 1952 and the first quarter of 1953. Fifteen hundred new schools are also expected to get underway—in the second quarter of this year.

Immediately prior to the N.P.A. announcement, the American Institute of

(Continued on page 56)



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Excellent for medium size city paving. Successful for contractors on all street and highway maintenance; for driveways, sidewalks, industrial plants.

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Sizes: L-12, 12-15 tons per hour. Will pave 25' street, 2" thick, one 300' block per day. L-25, 25-30 tons per hour. Will cover 20' road, 1" thick, at ½-mile per day.

Also portable repair plants, 4 and 8 tons per hour.

Write for catalog and name of nearest dealer.

Elkhart 3 **White Mfg. Co.** Indiana

2,357 SALES PROSPECTS

Most complete and up-to-date list of 2,357 new industrial plants and plant expansions—proposed and completed—within the 16 Southern and Southwestern states during the last 12 months. Compiled by states and cities.

NEW AND EXPANDING PLANTS is an excellent and valuable sales prospect list for any company that sells to Southern business.

$1.00 per copy

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Baltimore 3, Maryland

NEW! Thor CLAY DIGGER

- 30% More Power
- Inside Trigger or Outside Trigger
- Closed Retainer or Outside Retainer
- Choice of FIVE Chucks!

Yes, Thor FIELD TESTED the new No. 16 for three years before putting it into production. And when Thor engineers found the demands of tunnel contractors in various territories conflicted —Thor incorporated *all* the demands in one tool giving the user option of INSIDE OR OUTSIDE TRIGGER, CLOSED OR LATCH RETAINER, choice of any of FIVE CHUCKS with only one part change! . . . YOU NAME IT! — THE NO. 16 *HAS* IT!

Thor PORTABLE POWER TOOLS

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1701 Fairmount Ave., Philadelphia 30, Pa., Phone Stevenson 4-6804
294 Thomas Street, Pittsburgh 21, Pa., Phone Fremont 1-6155

Hot Mix Association Forms in Oklahoma

The Hot Mix Asphaltic Concrete Association of Oklahoma, Inc., has been chartered with A. J. Kavanaugh, president of the Metropolitan Paving Co., Oklahoma City, as president and Prof. J. Rogers Martin as chief engineer.

A. J. Martin

Announcing the purpose of the organization President Kavanaugh says that in view of the rapid expansion in the use of asphaltic concrete on highways and city streets and relatively rapid technical advances, the industry has come to recognize the necessity for an organization to foster sound engineering, full utilization of latest technical advances and public relations.

Professor Martin has a background of many years experience in all phases of asphaltic paving. He holds a B.S. degree in chemical engineering from the University of Texas, 1935 and also a professional degree in civil engineering from Oklahoma A & M College, 1949, and has received in recognition of outstanding contributions to the field of asphalt paving.

Following his graduation from Texas university he joined the Texas State Highway Department.

Southern Construction

(Continued from page 54)

Steel Construction revealed that serious unemployment and idle plant capacity in the structural steel fabricating industry is threatened early this summer unless approved orders for construction are immediately released in adequate volume by the federal government.

The Department of Labor reports that about 400,000 fewer site jobs will be available on new construction projects this year, as compared with last. New construction is expected to require an average of 2,000,000 full-time workers in 1952; for the fifth consecutive year such a level has been reached or exceeded.

A tapering off from the tempo of the record volume of 1951 was disclosed for the construction industry by the Associated General Contractors. The industry is seen as operating substantially below capacity with the expectation that the situation will be accentuated during the first half of 1952.

"Spotty" is the way officials of that national contractors' organization view the picture, with some areas busy on defense-related projects and others approaching almost complete idleness due to construction controls.

The slow-down of new projects on planning boards is ascribed to uncertainties over controls and is described as presaging "a progressive idleness, particularly in commercial and institutional building and highway construction, as current work is completed."

Lt. Gen. Lewis A. Pick, chief of engineers, last month said his corps has been called upon to handle $820,000,000 construction for the Army and $1,650,000,000 for the Air Force.

Geographically, such construction planned in the next six or eight months, will include $700,000,000 in the middle west; $290,000,000 on the eastern seaboard; $290,000,000 in the South; $275,000,000 in the far west and $90,000,000 in New England.

Largest items in the program are troop housing and warehousing. The expenditure for housing will be $360,000,000 and for warehousing, $210,000,000. Hospitals form a substantial part of the program, the cost being placed around $40,000,000 in posts, camps and stations in the United States. Army construction will be eighty per cent permanent; twenty per cent, temporary. Air Force work is either of the 10 or 25-year type.

Largest Army project is the $38,812,000 at Fort Bragg, N. C. At Fort Knox, Ky., the expenditure will be $37,570,000; at Fort Campbell, Ky., $30,736,000. Projects in excess of $20,000,000 are proposed at Fort Benning, Ga., Fort Bliss, Tex., Fort McClellan, Ala., and Fort Eustis, Va. The Wilmington, N. C., ammunition loading terminal will cost $22,805,000; the St. Louis military personnel records center, $22,700,000.

The two large items in the Air Force program are hangars and paving. For the first, the expenditure will be more than $80,000,000; for the other, including runways, aprons and taxiways, a budget of $110,000,000.

PROPOSALS

Bids March 17

Contract: No. 52-1
Reservoir No. 1
75th Street & Dickens Avenue Station

NOTICE TO STEEL FABRICATORS

OFFICE OF THE CITY MANAGER

Miami Beach, Florida
February 25, 1952

Sealed proposals will be received at the above office until 10:30 A.M. on the 17th day of March, 1952, at which time and place they will be publicly opened, for the following structure, in the City of Miami Beach, State of Florida, as required to be constructed by the City Council of said City:

One—4,580,000 gallon Steel Ground Storage Water Reservoir complete including Steel, Fabrication, Erection and Painting.

All work is to be done according to the Plans, Specifications, Proposal and Contract of the City of Miami Beach.

A certified check or bid bond in the amount of 2½% of the total amount of the Proposal shall accompany each bid. Checks shall be made out to the City of Miami Beach.

Plans and Specifications may be obtained upon request at the office of Manager Shop and Water Department, 3rd floor, City Hall, Miami Beach.

The right is reserved to reject any or all bids.

CITY COUNCIL CITY OF MIAMI BEACH
(Signed) C. W. Tomlinson
City Clerk

INDUSTRIAL

	February, 1952 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1952
Ala.	$3,130,000	$18,840,000	$4,932,000
Ark.	750,000	32,180,000	1,200,000
D. C.	.....	.....	.....
Fla.	532,000	875,000	1,413,000
Ga.	25,824,000	200,000	25,824,000
Ky.	1,300,000	.....	1,300,000
La.	47,020,000	400,000	79,222,000
Md.	44,221,000	1,410,000	45,500,000
Miss.	43,000	600,000	14,043,000
Mo.	3,725,000	178,450,000	4,456,000
N. C.	30,611,000	1,050,000	31,429,000
Okla.	500,000	15,820,000	2,200,000
S. C.	200,000	.....	2,050,000
Tenn.	425,000	400,000	1,530,000
Tex.	36,183,000	19,868,000	42,532,000
Va.	1,463,000	1,200,000	1,485,000
W. Va.	.....	2,946,000	.....
TOTAL	$195,927,000	$274,239,000	$259,116,000

PUBLIC BUILDING

(City, County, State, Federal; Schools)

	February, 1952 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1952
Ala.	$1,323,000	$3,375,000	$5,171,000
Ark.	400,000	460,000	924,000
D. C.	514,000	1,920,000	3,052,000
Fla.	2,416,000	5,875,000	8,221,000
Ga.	2,225,000	63,370,000	14,461,000
Ky.	.....	600,000	23,137,000
La.	4,197,000	5,455,000	6,252,000
Md.	9,433,000	17,994,000	12,677,000
Miss.	5,128,000	2,500,000	7,308,000
Mo.	877,000	4,908,000	2,135,000
N. C.	2,929,000	5,855,000	6,411,000
Okla.	7,220,000	1,695,000	7,220,000
S. C.	3,017,000	680,000	7,596,000
Tenn.	1,683,000	2,345,000	3,304,000
Tex.	31,115,000	25,219,000	51,866,000
Va.	5,716,000	4,080,000	15,535,000
W. Va.	20,000	210,000	20,000
TOTAL	$78,213,000	$146,591,000	$175,290,000

PUBLIC ENGINEERING

(Dams, Drainage, Waterworks, Sewers, etc.)

	February, 1952 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1952
Ala.	$ 570,000	$7,305,000	$1,002,000
Ark.	.....	11,634,000	250,000
D. C.	45,000	3,055,000	441,000
Fla.	18,773,000	57,715,000	38,081,000
Ga.	3,872,000	9,000,000	4,275,000
Ky.	760,000	9,360,000	760,000
La.	1,980,000	2,600,000	4,662,000
Md.	547,000	4,235,000	2,062,000
Miss.	1,454,000	5,030,000	1,454,000
Mo.	504,000	9,772,000	2,889,000
N. C.	4,201,000	7,665,000	9,339,000
Okla.	3,422,000	10,635,000	10,526,000
S. C.	2,192,000	3,775,000	4,508,000
Tenn.	1,854,000	26,520,000	12,325,000
Tex.	16,670,000	42,300,000	30,877,000
Va.	736,000	333,105,000	7,268,000
W. Va.	60,000	341,530,000	60,000
TOTAL	$57,640,000	$885,236,000	$130,779,000

ROADS, STREETS, BRIDGES

	February, 1952 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1952
Ala.	$1,498,000	$1,200,000	$1,533,000
Ark.	2,603,000	60,000	2,603,000
D. C.	.....	96,320,000	.....
Fla.	1,862,000	1,065,000	6,475,000
Ga.	3,706,000	1,500,000	3,706,000
Ky.	.....	1,520,000	2,348,000
La.	2,041,000	1,620,000	5,434,000
Md.	2,413,000	455,211,000	3,629,000
Miss.	76,000	.....	118,000
Mo.	2,308,000	1,845,000	5,761,000
N. C.	8,641,000	1,860,000	8,641,000
Okla.	3,095,000	5,057,000	5,776,000
S. C.	2,029,000	840,000	4,546,000
Tenn.	.....	540,000	.....
Tex.	8,755,000	8,335,000	19,546,000
Va.	3,380,000	6,400,000	4,574,000
W. Va.	.....	380,000	672,000
TOTAL	$42,407,000	$583,753,000	$75,362,000

PRIVATE BUILDING

(Assembly, Commercial, Residential, Office)

	February, 1952 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Two Months 1952
Ala.	$2,910,000	$6,930,000	$7,670,000
Ark.	.....	130,000	50,000
D. C.	.....	3,363,000	450,000
Fla.	12,316,000	6,395,000	23,536,000
Ga.	3,638,000	15,630,000	8,091,000
Ky.	1,723,000	.....	1,723,000
La.	8,775,000	1,215,000	8,998,000
Md.	12,334,000	3,445,000	24,152,000
Miss.	411,000	1,960,000	3,338,000
Mo.	200,000	200,000	433,000
N. C.	1,710,000	2,550,000	4,121,000
Okla.	.....	980,000	.....
S. C.	20,000	4,740,000	383,000
Tenn.	4,950,000	5,855,000	11,866,000
Tex.	11,147,000	29,939,000	16,274,000
Va.	2,422,000	9,050,000	8,172,000
W. Va.	.....	1,800,000	.....
TOTAL	$62,556,000	$93,302,000	$119,257,000

INDEX OF ADVERTISERS

The state groups included in this index are composed of the following states:

N STATE GROUP		C STATE GROUP		S STATE GROUP		W STATE GROUP		
Kentucky	Virginia	North Carolina	Alabama	Georgia	Arkansas	Missouri	Mississippi
Maryland	West Virginia	South Carolina	Florida	Tennessee	Louisiana	Oklahoma	Texas

Speeds Work . . . Lowers Costs

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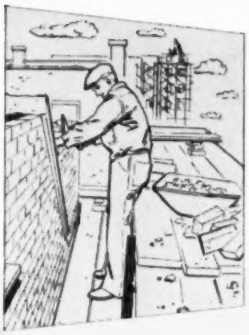
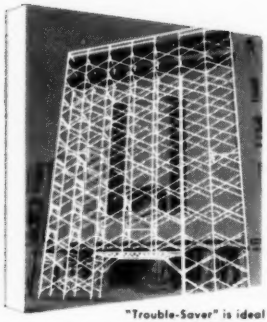
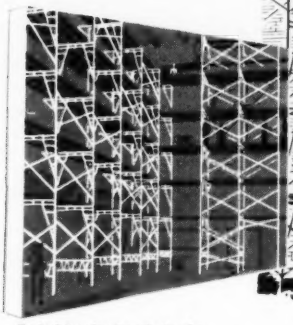
Sectional Steel Scaffolding

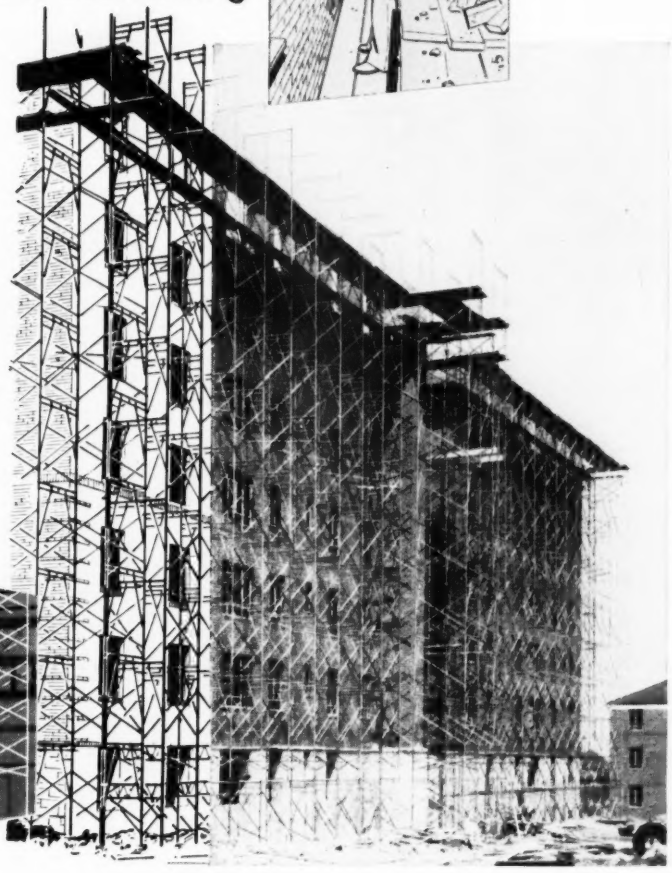




"Trouble-Saver" is ideal for repairs, refacing.



Typical interior installation for lathing, plastering, painting.



Listed by Underwriters' Laboratories, Inc.

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● This is only *one of many* types of scaffolds we have for every possible need. Fully *coped and welded* frames, full *double diagonal* bracing give greatest safety and rigidity. Yet no tools are required. Easy-to-erect "Trouble Saver" Scaffolding, which we distribute, helps you cut scaffolding costs to a minimum.

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